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\* /opt/cola/permits/1698848157\_1685285743.4325588/0/netty-handler-proxy-4-1-93-final-sources-jar/META-INF/maven/io.netty/netty-handler-proxy/pom.xml

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## 1.5 elasticsearch 8.8.1

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/\* CMU libsasl

\* Tim Martin

\* Rob Earhart

\* Rob Siemborski

\*/

/\*

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* Tim Martin
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* Rob Earhart
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* Rob Siemborski
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## 1.14 commons-compiler 2.6.1

## 1.15 dropwizard-jackson 2.0.28

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- \* /opt/cola/permits/1698848009\_1685285746.5913968/0/netty-codec-smtp-4-1-93-final-sources-jar/io/netty/handler/codec/smtp/SntpRequests.java
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## 1.17 dropwizard-jackson 2.0.34

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\* /opt/cola/permits/1670772344\_1683726497.7163098/0/dropwizard-jetty-2-0-28-sources-1-  
jar/io/dropwizard/jetty/LocalIpFilter.java

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```
*/opt/cola/permits/1670772344_1683726497.7163098/0/dropwizard-jetty-2-0-28-sources-1-
jar/io/dropwizard/jetty/NetUtil.java
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*/opt/cola/permits/1743695363_1689241101.3854547/0/netty-transport-native-epoll-4-1-93-final-sources-1-
jar/META-INF/maven/io.netty/netty-transport-native-epoll/pom.xml
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\* /opt/cola/permits/1743695363\_1689241101.3854547/0/netty-transport-native-epoll-4-1-93-final-sources-1-jar/netty\_epoll\_native.c

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\* /opt/cola/permits/1743695363\_1689241101.3854547/0/netty-transport-native-epoll-4-1-93-final-sources-1-jar/netty\_epoll\_linuxsocket.c

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\* /opt/cola/permits/1268278107\_1675380985.331295/0/jpowershell-2-0-sources-jar/com/profesorfalken/jpowershell/PowerShellNotAvailableException.java  
\* /opt/cola/permits/1268278107\_1675380985.331295/0/jpowershell-2-0-sources-jar/com/profesorfalken/jpowershell/PowerShellCommandProcessor.java  
\* /opt/cola/permits/1268278107\_1675380985.331295/0/jpowershell-2-0-sources-jar/com/profesorfalken/jpowershell/PowerShellResponse.java  
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\* /opt/cola/permits/1268278107\_1675380985.331295/0/jpowershell-2-0-sources-jar/com/profesorfalken/jpowershell/PowerShellCodepage.java

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* /opt/cola/permits/1268278107_1675380985.331295/0/jpowershell-2-0-sources-  
jar/com/profesorfalken/jpowershell/OSDetector.java
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* /opt/cola/permits/1268278107_1675380985.331295/0/jpowershell-2-0-sources-jar/META-  
INF/maven/com.profesorfalken/jPowerShell/pom.xml
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## 1.22 websocket-common 9.4.51.v20230217

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\* javax.servlet:javax.servlet-api

\* javax.annotation:javax.annotation-api

\* javax.transaction:javax.transaction-api

\* javax.websocket:javax.websocket-api

-----

Oracle OpenJDK

If ALPN is used to negotiate HTTP/2 connections, then the following artifacts may be included in the distribution or downloaded when ALPN module is selected.

\* java.sun.security.ssl

These artifacts replace/modify OpenJDK classes. The modifications are hosted at github and both modified and original are under GPL v2 with classpath exceptions.

<http://openjdk.java.net/legal/gplv2+ce.html>

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OW2

The following artifacts are licensed by the OW2 Foundation according to the terms of <http://asm.ow2.org/license.html>

org.ow2.asm:asm-commons

org.ow2.asm:asm

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Apache

The following artifacts are ASL2 licensed.

org.apache.taglibs:taglibs-standard-spec

org.apache.taglibs:taglibs-standard-impl

-----

## MortBay

The following artifacts are ASL2 licensed. Based on selected classes from following Apache Tomcat jars, all ASL2 licensed.

org.mortbay.jasper:apache-jsp  
org.apache.tomcat:tomcat-jasper  
org.apache.tomcat:tomcat-juli  
org.apache.tomcat:tomcat-jsp-api  
org.apache.tomcat:tomcat-el-api  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-api  
org.apache.tomcat:tomcat-util-scan  
org.apache.tomcat:tomcat-util

org.mortbay.jasper:apache-el  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-el-api

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org.eclipse.jetty.toolchain:jetty-schemas

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## Assorted

The UnixCrypt.java code implements the one way cryptography used by Unix systems for simple password protection. Copyright 1996 Aki Yoshida, modified April 2001 by Iris Van den Broeke, Daniel Deville.

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## 1.23 janino 2.6.1

# 1.24 jcommander 1.78

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```
* /opt/cola/permits/1135840359_1613613123.36/0/jcommander-1-78-sources-2-  
jar/com/beust/jcommander/IUsageFormatter.java  
* /opt/cola/permits/1135840359_1613613123.36/0/jcommander-1-78-sources-2-  
jar/com/beust/jcommander/UnixStyleUsageFormatter.java  
* /opt/cola/permits/1135840359_1613613123.36/0/jcommander-1-78-sources-2-  
jar/com/beust/jcommander/JCommander.java  
* /opt/cola/permits/1135840359_1613613123.36/0/jcommander-1-78-sources-2-  
jar/com/beust/jcommander/DefaultUsageFormatter.java
```

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- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/converters/URLConverter.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/internal/Lists.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/ParameterException.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/internal/DefaultConverterFactory.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/converters/IntegerConverter.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/converters/FileConverter.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/converters/StringConverter.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/IStringConverter.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/internal/Sets.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/converters/LongConverter.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/internal/Maps.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/converters/InetAddressConverter.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/Parameters.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/ParameterDescription.java
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- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/converters/BaseConverter.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/converters/CharArrayConverter.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/converters/PathConverter.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/ParametersDelegate.java
- \* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/ResourceBundle.java

\* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/defaultprovider/PropertyFileDefaultProvider.java  
\* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/IDefaultProvider.java  
\* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/converters/DoubleConverter.java  
\* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/converters/BigDecimalConverter.java  
\* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/converters/FloatConverter.java  
\* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/MissingCommandException.java  
\* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/converters/NoConverter.java  
\* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/converters/BooleanConverter.java  
\* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/Parameter.java  
\* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/converters/ISO8601DateConverter.java  
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\* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/validators/PositiveInteger.java  
\* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/validators/NoValueValidator.java  
\* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-



jar/com/beust/jcommander/IPParameterValidator.java  
\* /opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-  
jar/com/beust/jcommander/IPParameterValidator2.java

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## 1.26 jetty-client 9.4.51.v20230217

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Eclipse

The following artifacts are EPL.

\* org.eclipse.jetty.orbit:org.eclipse.jdt.core

The following artifacts are EPL and ASL2.

\* org.eclipse.jetty.orbit:javax.security.auth.message

The following artifacts are EPL and CDDL 1.0.

\* org.eclipse.jetty.orbit:javax.mail.glassfish

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## Oracle

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<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

- \* javax.servlet:javax.servlet-api
- \* javax.annotation:javax.annotation-api
- \* javax.transaction:javax.transaction-api
- \* javax.websocket:javax.websocket-api

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## Oracle OpenJDK

If ALPN is used to negotiate HTTP/2 connections, then the following artifacts may be included in the distribution or downloaded when ALPN module is selected.

- \* java.sun.security.ssl

These artifacts replace/modify OpenJDK classes. The modifications are hosted at github and both modified and original are under GPL v2 with classpath exceptions.

<http://openjdk.java.net/legal/gplv2+ce.html>

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## OW2

The following artifacts are licensed by the OW2 Foundation according to the terms of <http://asm.ow2.org/license.html>

org.ow2.asm:asm-commons  
org.ow2.asm:asm

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## Apache

The following artifacts are ASL2 licensed.

org.apache.taglibs:taglibs-standard-spec  
org.apache.taglibs:taglibs-standard-impl

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MortBay

The following artifacts are ASL2 licensed. Based on selected classes from following Apache Tomcat jars, all ASL2 licensed.

org.mortbay.jasper:apache-jsp  
org.apache.tomcat:tomcat-jasper  
org.apache.tomcat:tomcat-juli  
org.apache.tomcat:tomcat-jsp-api  
org.apache.tomcat:tomcat-el-api  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-api  
org.apache.tomcat:tomcat-util-scan  
org.apache.tomcat:tomcat-util

org.mortbay.jasper:apache-el  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-el-api

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Mortbay

The following artifacts are CDDL + GPLv2 with classpath exception.

<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

org.eclipse.jetty.toolchain:jetty-schemas

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Assorted

The UnixCrypt.java code implements the one way cryptography used by Unix systems for simple password protection. Copyright 1996 Aki Yoshida, modified April 2001 by Iris Van den Broeke, Daniel Deville.

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## 1.27 gstreamer 1.20.1

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## 1.29 jline 2.14.6

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## 1.30 zlib 1.2.13

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## 1.31 jackson-datatype-joda 2.14.1

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## 1.32 cglib 3.3.0

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\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/codehaus/groovy/binding/MutualPropertyBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/codehaus/groovy/binding/SwingTimerTriggerBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/RichActionWidgetFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/ActionFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/BindGroupFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/codehaus/groovy/binding/PropertyPathFullBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/ButtonGroupFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/codehaus/groovy/binding/AggregateBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/impl/ClosureRenderer.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/EtchedBorderFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/binding/JTextComponentProperties.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/model/PropertyModel.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/MatteBorderFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/apache/groovy/swing/binding/PropertyBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/apache/groovy/swing/binding/ClosureTriggerBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/apache/groovy/swing/binding/SwingTimerTriggerBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/codehaus/groovy/binding/ClosureSourceBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/apache/groovy/swing/binding/TriggerBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/impl/TableLayout.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/codehaus/groovy/binding/BindingUpdatable.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/CompoundBorderFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/binding/JSpinnerProperties.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/DialogFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-

jar/groovy/swing/binding/AbstractSyntheticMetaMethods.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/ScrollPaneFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/codehaus/groovy/binding/PropertyChangeProxyTargetBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/EmptyBorderFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/SeparatorFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/apache/groovy/swing/binding/PropertyPathFullBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/codehaus/groovy/binding/TriggerBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/impl/TableLayoutRow.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/model/ClosureModel.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/LayoutFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/model/DefaultTableModel.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/SwingBuilder.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/ListFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/codehaus/groovy/binding/PropertyBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/TextArgWidgetFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/codehaus/groovy/binding/TargetBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/CollectionFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/model/ValueHolder.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/codehaus/groovy/binding/SourceBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/BoxLayoutFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/BevelBorderFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/org/apache/groovy/swing/binding/PropertyChangeProxyTargetBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/factory/WindowFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
jar/groovy/swing/binding/JSliderProperties.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-

jar/groovy/swing/factory/FrameFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/model/ValueModel.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/org/apache/groovy/swing/binding/TargetBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/factory/CellEditorFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/model/ClosureModel.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/factory/GridBagFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/org/apache/groovy/swing/extensions/SwingExtensions.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/factory/LineBorderFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/org/apache/groovy/swing/binding/BindPath.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/org/apache/groovy/swing/binding/BindingUpdatable.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/factory/ColumnModelFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/impl/ClosureCellEditor.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/factory/TableLayoutFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/model/NestedValueModel.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/factory/InternalFrameFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/org/codehaus/groovy/binding/FullBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/org/apache/groovy/swing/binding/SourceBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/org/apache/groovy/swing/binding/EventTriggerBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/factory/FormattedTextFactory.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/binding/JListMetaMethods.groovy  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/table/TableMap.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/model/FormModel.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/model/ValueModel.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/org/apache/groovy/swing/binding/FullBinding.java  
\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/factory/TitledBorderFactory.groovy

```

* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/model/DefaultTableColumn.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/factory/MapFactory.groovy
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/org/codehaus/groovy/binding/AbstractFullBinding.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/org/codehaus/groovy/binding/BindPath.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/model/DefaultTableModel.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/factory/ComboBoxFactory.groovy
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/org/apache/groovy/swing/binding/AbstractFullBinding.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/org/apache/groovy/swing/binding/AggregateBinding.java

```

## 1.34 groovy-dateutil 3.0.9

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```

Found in path(s):

```

* /opt/cola/permits/1268275752_1644386843.29/0/groovy-dateutil-3-0-9-sources-
jar/org/apache/groovy/dateutil/extensions/DateUtilExtensions.java
* /opt/cola/permits/1268275752_1644386843.29/0/groovy-dateutil-3-0-9-sources-
jar/org/apache/groovy/dateutil/extensions/DateUtilStaticExtensions.java

```

# 1.35 netty-transport-native-kqueue

## 4.1.93.Final

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```

Found in path(s):

```
* /opt/cola/permits/1743888319_1689253531.703963/0/netty-transport-native-kqueue-4-1-93-final-sources-1-jar/netty_kqueue_eventarray.h
* /opt/cola/permits/1743888319_1689253531.703963/0/netty-transport-native-kqueue-4-1-93-final-sources-1-jar/netty_kqueue_eventarray.c
* /opt/cola/permits/1743888319_1689253531.703963/0/netty-transport-native-kqueue-4-1-93-final-sources-1-jar/netty_kqueue_native.c
* /opt/cola/permits/1743888319_1689253531.703963/0/netty-transport-native-kqueue-4-1-93-final-sources-1-jar/netty_kqueue_bsdsocket.c
* /opt/cola/permits/1743888319_1689253531.703963/0/netty-transport-native-kqueue-4-1-93-final-sources-1-jar/netty_kqueue_bsdsocket.h
```

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-->

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\* /opt/cola/permits/1743888319\_1689253531.703963/0/netty-transport-native-kqueue-4-1-93-final-sources-1-jar/META-INF/maven/io.netty/netty-transport-native-kqueue/pom.xml

## 1.36 feign-jackson 8.15.1

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\* /opt/ws\_local/PERMITS\_SQL/1041687872\_1590954410.55/0/feign-jackson-8-15-1-sources-jar/feign/jackson/JacksonDecoder.java  
\* /opt/ws\_local/PERMITS\_SQL/1041687872\_1590954410.55/0/feign-jackson-8-15-1-sources-jar/feign/jackson/JacksonEncoder.java

## 1.37 logback-access 1.2.11

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Found in path(s):

```
* /opt/cola/permits/1722433605_1686901730.8528392/0/snappy-0-3-sources-3-jar/org/iq80/snappy/Memory.java
* /opt/cola/permits/1722433605_1686901730.8528392/0/snappy-0-3-sources-3-
jar/org/iq80/snappy/SnappyCompressor.java
* /opt/cola/permits/1722433605_1686901730.8528392/0/snappy-0-3-sources-3-jar/org/iq80/snappy/Main.java
* /opt/cola/permits/1722433605_1686901730.8528392/0/snappy-0-3-sources-3-
jar/org/iq80/snappy/UnsafeMemory.java
* /opt/cola/permits/1722433605_1686901730.8528392/0/snappy-0-3-sources-3-
jar/org/iq80/snappy/SnappyDecompressor.java
* /opt/cola/permits/1722433605_1686901730.8528392/0/snappy-0-3-sources-3-
jar/org/iq80/snappy/SnappyInternalUtils.java
* /opt/cola/permits/1722433605_1686901730.8528392/0/snappy-0-3-sources-3-
jar/org/iq80/snappy/CorruptionException.java
* /opt/cola/permits/1722433605_1686901730.8528392/0/snappy-0-3-sources-3-jar/org/iq80/snappy/Snappy.java
* /opt/cola/permits/1722433605_1686901730.8528392/0/snappy-0-3-sources-3-
jar/org/iq80/snappy/SlowMemory.java
* /opt/cola/permits/1722433605_1686901730.8528392/0/snappy-0-3-sources-3-
jar/org/iq80/snappy/SnappyInputStream.java
* /opt/cola/permits/1722433605_1686901730.8528392/0/snappy-0-3-sources-3-jar/org/iq80/snappy/Crc32C.java
* /opt/cola/permits/1722433605_1686901730.8528392/0/snappy-0-3-sources-3-
jar/org/iq80/snappy/SnappyOutputStream.java
* /opt/cola/permits/1722433605_1686901730.8528392/0/snappy-0-3-sources-3-
jar/org/iq80/snappy/BufferRecycler.java
* /opt/cola/permits/1722433605_1686901730.8528392/0/snappy-0-3-sources-3-
```

## 1.39 jsoup 1.15.3

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```

Found in path(s):

```
* /opt/cola/permits/1135880235_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/Validator.java  
* /opt/cola/permits/1135880235_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/metadata/CascadableDescriptor.java  
* /opt/cola/permits/1135880235_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/ConstraintTarget.java
```

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/FutureOrPresent.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/Null.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/ConstraintValidatorContext.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/metadata/ExecutableDescriptor.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/groups/Default.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/MessageInterpolator.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/metadata/package-info.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/valueextraction/Unwrapping.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/valueextraction/ValueExtractor.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraintvalidation/ValidationTarget.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/metadata/MethodDescriptor.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/package-info.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/UnexpectedTypeException.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/metadata/BeanDescriptor.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/Digits.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/bootstrap/ProviderSpecificBootstrap.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/valueextraction/UnwrapByDefault.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/NegativeOrZero.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/ConstraintViolation.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/ConstraintDefinitionException.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/metadata/ValidateUnwrappedValue.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraintvalidation/SupportedValidationTarget.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/groups/package-info.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/spi/ValidationProvider.java



\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/ElementKind.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/metadata/GroupConversionDescriptor.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/valueextraction/ExtractedValue.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/bootstrap/GenericBootstrap.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/metadata/MethodType.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/valueextraction/ValueExtractorDeclarationException.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/metadata/ConstructorDescriptor.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraintvalidation/package-info.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/AssertTrue.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/Path.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/executable/package-info.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/valueextraction/package-info.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/PositiveOrZero.java

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\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/BootstrapConfiguration.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/metadata/ElementDescriptor.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/metadata/ContainerElementTypeDescriptor.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/GroupDefinitionException.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/Min.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/groups/ConvertGroup.java

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\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/ValidatorContext.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/NotBlank.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/spi/package-info.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/Constraint.java

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\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/ClockProvider.java

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\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/Size.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/PastOrPresent.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/ConstraintViolationException.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/bootstrap/package-info.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/TraversableResolver.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/executable/ExecutableValidator.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/ValidationProviderResolver.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/ValidatorFactory.java

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\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/metadata/ConstraintDescriptor.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/metadata/ParameterDescriptor.java

\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/NotNull.java  
\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/package-info.java  
\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/GroupSequence.java  
\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/Negative.java  
\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/ConstraintValidatorFactory.java  
\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/ValidationException.java  
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\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/spi/BootstrapState.java  
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\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/ConstraintDeclarationException.java  
\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/metadata/PropertyDescriptor.java  
\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/ConstraintValidator.java  
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\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/AssertFalse.java  
\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/Future.java  
\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/DecimalMax.java  
\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/Positive.java  
\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/NotEmpty.java  
\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/spi/ConfigurationState.java  
\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/Payload.java  
\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/DecimalMin.java  
\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/javax/validation/constraints/Past.java

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~ Jakarta Bean Validation API

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\* /opt/cola/permits/1135880235\_1613624044.2/0/jakarta-validation-api-2-0-2-sources-3-jar/META-INF/maven/jakarta.validation/jakarta.validation-api/pom.xml

## 1.41 netty-codec 4.1.93.Final

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\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/Lz4Constants.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/SnappyFramedDecoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/FastLzFrameDecoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/json/package-info.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/FastLz.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/Bzip2Encoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-

jar/io/netty/handler/codec/compression/Bzip2Decoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/Crc32.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/LzfDecoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/MessageAggregationException.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/LzmaFrameEncoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/FastLzFrameEncoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/LzfEncoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/Bzip2BitReader.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/AsciiHeadersEncoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/Bzip2DivSufSort.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/Bzip2MoveToFrontTable.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/Bzip2Rand.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/Bzip2BitWriter.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/Bzip2HuffmanStageEncoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/SnappyFramedEncoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/Bzip2HuffmanStageDecoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/Bzip2BlockCompressor.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/Bzip2Constants.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/Bzip2MTFAndRLE2StageEncoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/json/JsonObjectDecoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/Bzip2HuffmanAllocator.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/Bzip2BlockDecompressor.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/Lz4FrameDecoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/Lz4FrameEncoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-

jar/io/netty/handler/codec/DecoderResultProvider.java

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\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/protobuf/ProtobufDecoderNano.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/HeadersUtils.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/ProtocolDetectionState.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/protobuf/ProtobufEncoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/protobuf/ProtobufEncoderNano.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/protobuf/ProtobufDecoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/protobuf/ProtobufVarint32FrameDecoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/ProtocolDetectionResult.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/protobuf/ProtobufVarint32LengthFieldPrepender.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/UnsupportedValueConverter.java

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\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/CompressionUtil.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/DateFormatter.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/string/LineEncoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/string/LineSeparator.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/DatagramPacketEncoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/CodecOutputList.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/DatagramPacketDecoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/ByteBufChecksum.java

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\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/JdkZlibDecoder.java

```
* /opt/cola/permits/1698847974_1685285733.3736825/0/netty-codec-4-1-93-final-sources-
jar/io/netty/handler/codec/compression/Crc32c.java
* /opt/cola/permits/1698847974_1685285733.3736825/0/netty-codec-4-1-93-final-sources-
jar/io/netty/handler/codec/xml/XmlFrameDecoder.java
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* /opt/cola/permits/1698847974_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/META-INF/native-
image/io.netty.netty-codec/native-image.properties
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```
* /opt/cola/permits/1698847974_1685285733.3736825/0/netty-codec-4-1-93-final-sources-
jar/io/netty/handler/codec/DefaultHeadersImpl.java
```

```
* /opt/cola/permits/1698847974_1685285733.3736825/0/netty-codec-4-1-93-final-sources-
jar/io/netty/handler/codec/CharSequenceValueConverter.java
```

```
* /opt/cola/permits/1698847974_1685285733.3736825/0/netty-codec-4-1-93-final-sources-
jar/io/netty/handler/codec/ValueConverter.java
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\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codecs/compression/EncoderUtil.java

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/\*\*

\* Utility class for {@link ByteBuf} that encodes and decodes to and from

\* [Base64](https://en.wikipedia.org/wiki/Base64) notation.

\* <p>

\* The encoding and decoding algorithm in this class has been derived from

\* [Robert Harder's Public Domain](http://iharder.sourceforge.net/current/java/base64/)

\* Base64 Encoder/Decoder</a>.

\*/

Found in path(s):

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codecs/base64/Base64.java

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*/
/*
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*/
/**
* Enumeration of supported Base64 dialects.
* <p>
* The internal lookup tables in this class has been derived from
* <a href="http://iharder.sourceforge.net/current/java/base64/">Robert Harder's Public Domain
* Base64 Encoder/Decoder</a>.
*/
```

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```
* /opt/cola/permits/1698847974_1685285733.3736825/0/netty-codec-4-1-93-final-sources-
jar/io/netty/handler/codec/base64/Base64Dialect.java
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\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/marshalling/DefaultUnmarshallerProvider.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/marshalling/package-info.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/bytes/ByteArrayEncoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/JZlibDecoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/marshalling/ChannelBufferByteInput.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/marshalling/UnmarshallerProvider.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/DelimiterBasedFrameDecoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/marshalling/MarshallingDecoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/serialization/CompactObjectOutputStream.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/serialization/ObjectDecoderInputStream.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/UnsupportedMessageTypeException.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/DecompressionException.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/bytes/ByteArrayDecoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/FixedLengthFrameDecoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/serialization/ObjectEncoderOutputStream.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/JdkZlibEncoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/serialization/package-info.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/base64/Base64Encoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/serialization/CompactObjectInputStream.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/MessageToMessageCodec.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/ZlibDecoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/EncoderException.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/marshalling/MarshallingEncoder.java

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\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/ZlibEncoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/serialization/ClassLoaderClassResolver.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/marshalling/MarshallerProvider.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/ZlibUtil.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/serialization/ObjectEncoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/MessageAggregator.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/JZlibEncoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/string/StringEncoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/MessageToMessageEncoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/base64/Base64Decoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/LineBasedFrameDecoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/marshalling/CompatibleMarshallingDecoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/marshalling/ContextBoundUnmarshallerProvider.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/xml/package-info.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/TooLongFrameException.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/DecoderException.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/base64/package-info.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/MessageToMessageDecoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/CompressionException.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/ByteToMessageDecoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/DecoderResult.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/CodecException.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/ReplayingDecoder.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/serialization/ReferenceMap.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/SnappyFrameDecoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/PrematureChannelClosureException.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/Snappy.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/MessageToByteEncoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/package-info.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/SnappyFrameEncoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/ByteToMessageCodec.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/protobuf/package-info.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/serialization/SoftReferenceMap.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/marshalling/ThreadLocalMarshallerProvider.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/ReplayingDecoderByteBuf.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/serialization/ObjectDecoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/serialization/CompatibleObjectEncoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/string/StringDecoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/marshalling/LimitingByteInput.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/Delimiters.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/ZlibCodecFactory.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/bytes/package-info.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/package-info.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/LengthFieldPrepender.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/serialization/WeakReferenceMap.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/CorruptedFrameException.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/marshalling/ChannelBufferByteOutput.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/marshalling/DefaultMarshallerProvider.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/ZlibWrapper.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/marshalling/ThreadLocalUnmarshallerProvider.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/serialization/CachingClassResolver.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/serialization/ClassResolvers.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/string/package-info.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/serialization/ClassResolver.java  
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/\*\*

\* A decoder that splits the received {@link ByteBuf}s dynamically by the  
\* value of the length field in the message. It is particularly useful when you  
\* decode a binary message which has an integer header field that represents the  
\* length of the message body or the whole message.

\* <p>

\* {@link LengthFieldBasedFrameDecoder} has many configuration parameters so  
\* that it can decode any message with a length field, which is often seen in  
\* proprietary client-server protocols. Here are some example that will give  
\* you the basic idea on which option does what.

\*

\* <h3>2 bytes length field at offset 0, do not strip header</h3>

\*

\* The value of the length field in this example is <tt>12 (0x0C)</tt> which  
\* represents the length of "HELLO, WORLD". By default, the decoder assumes  
\* that the length field represents the number of the bytes that follows the  
\* length field. Therefore, it can be decoded with the simplistic parameter  
\* combination.

\* <pre>

```

* <b>lengthFieldOffset</b> = <b>0</b>
* <b>lengthFieldLength</b> = <b>2</b>
* lengthAdjustment = 0
* initialBytesToStrip = 0 (= do not strip header)
*
* BEFORE DECODE (14 bytes)    AFTER DECODE (14 bytes)
* +-----+-----+ +-----+-----+
* | Length | Actual Content |---->| Length | Actual Content |
* | 0x000C | "HELLO, WORLD" |   | 0x000C | "HELLO, WORLD" |
* +-----+-----+ +-----+-----+
* </pre>
*
* <h3>2 bytes length field at offset 0, strip header</h3>
*
* Because we can get the length of the content by calling
* { @link ByteBuf#readableBytes() }, you might want to strip the length
* field by specifying <tt>initialBytesToStrip</tt>. In this example, we
* specified <tt>2</tt>, that is same with the length of the length field, to
* strip the first two bytes.
* <pre>
* lengthFieldOffset = 0
* lengthFieldLength = 2
* lengthAdjustment = 0
* <b>initialBytesToStrip</b> = <b>2</b> (= the length of the Length field)
*
* BEFORE DECODE (14 bytes)    AFTER DECODE (12 bytes)
* +-----+-----+ +-----+
* | Length | Actual Content |---->| Actual Content |
* | 0x000C | "HELLO, WORLD" |   | "HELLO, WORLD" |
* +-----+-----+ +-----+
* </pre>
*
* <h3>2 bytes length field at offset 0, do not strip header, the length field
* represents the length of the whole message</h3>
*
* In most cases, the length field represents the length of the message body
* only, as shown in the previous examples. However, in some protocols, the
* length field represents the length of the whole message, including the
* message header. In such a case, we specify a non-zero
* <tt>lengthAdjustment</tt>. Because the length value in this example message
* is always greater than the body length by <tt>2</tt>, we specify <tt>-2</tt>
* as <tt>lengthAdjustment</tt> for compensation.
* <pre>
* lengthFieldOffset = 0
* lengthFieldLength = 2
* <b>lengthAdjustment</b> = <b>-2</b> (= the length of the Length field)
* initialBytesToStrip = 0
*

```

```

* BEFORE DECODE (14 bytes)      AFTER DECODE (14 bytes)
* +-----+-----+-----+-----+
* | Length | Actual Content |---->| Length | Actual Content |
* | 0x000E | "HELLO, WORLD" |   | 0x000E | "HELLO, WORLD" |
* +-----+-----+-----+-----+
* </pre>

```

\* <h3>3 bytes length field at the end of 5 bytes header, do not strip header</h3>

\* The following message is a simple variation of the first example. An extra header value is prepended to the message. <tt>lengthAdjustment</tt> is zero again because the decoder always takes the length of the prepended data into account during frame length calculation.

```

* <pre>
* <b>lengthFieldOffset</b> = <b>2</b> (= the length of Header 1)
* <b>lengthFieldLength</b> = <b>3</b>
* lengthAdjustment = 0
* initialBytesToStrip = 0

```

```

* BEFORE DECODE (17 bytes)      AFTER DECODE (17 bytes)
* +-----+-----+-----+-----+
* | Header 1 | Length | Actual Content |---->| Header 1 | Length | Actual Content |
* | 0xCAFE | 0x00000C | "HELLO, WORLD" |   | 0xCAFE | 0x00000C | "HELLO, WORLD" |
* +-----+-----+-----+-----+
* </pre>

```

\* <h3>3 bytes length field at the beginning of 5 bytes header, do not strip header</h3>

\* This is an advanced example that shows the case where there is an extra header between the length field and the message body. You have to specify a positive <tt>lengthAdjustment</tt> so that the decoder counts the extra header into the frame length calculation.

```

* <pre>
* lengthFieldOffset = 0
* lengthFieldLength = 3
* <b>lengthAdjustment</b> = <b>2</b> (= the length of Header 1)
* initialBytesToStrip = 0

```

```

* BEFORE DECODE (17 bytes)      AFTER DECODE (17 bytes)
* +-----+-----+-----+-----+
* | Length | Header 1 | Actual Content |---->| Length | Header 1 | Actual Content |
* | 0x00000C | 0xCAFE | "HELLO, WORLD" |   | 0x00000C | 0xCAFE | "HELLO, WORLD" |
* +-----+-----+-----+-----+
* </pre>

```

\* <h3>2 bytes length field at offset 1 in the middle of 4 bytes header,

\* strip the first header field and the length field</h3>



\* This is a combination of all the examples above. There are the prepended header before the length field and the extra header after the length field. The prepended header affects the `lengthFieldOffset` and the extra header affects the `lengthAdjustment`. We also specified a non-zero `initialBytesToStrip` to strip the length field and the prepended header from the frame. If you don't want to strip the prepended header, you could specify `0` for `initialBytesToSkip`.

\* `<pre>`

\* `lengthFieldOffset = 1` (= the length of HDR1)

\* `lengthFieldLength = 2`

\* `<b>lengthAdjustment</b> = <b>1</b>` (= the length of HDR2)

\* `<b>initialBytesToStrip</b> = <b>3</b>` (= the length of HDR1 + LEN)

\*

\* BEFORE DECODE (16 bytes)                      AFTER DECODE (13 bytes)

\* +-----+-----+-----+-----+      +-----+-----+-----+-----+-----+-----+

\* | HDR1 | Length | HDR2 | Actual Content |---->| HDR2 | Actual Content |

\* | 0xCA | 0x00C | 0xFE | "HELLO, WORLD" |      | 0xFE | "HELLO, WORLD" |

\* +-----+-----+-----+-----+      +-----+-----+-----+-----+-----+-----+

\* `</pre>`

\*

\* `<h3>`2 bytes length field at offset 1 in the middle of 4 bytes header,

\* strip the first header field and the length field, the length field

\* represents the length of the whole message`</h3>`

\*

\* Let's give another twist to the previous example. The only difference from

\* the previous example is that the length field represents the length of the

\* whole message instead of the message body, just like the third example.

\* We have to count the length of HDR1 and Length into `lengthAdjustment`.

\* Please note that we don't need to take the length of HDR2 into account

\* because the length field already includes the whole header length.

\* `<pre>`

\* `lengthFieldOffset = 1`

\* `lengthFieldLength = 2`

\* `<b>lengthAdjustment</b> = <b>-3</b>` (= the length of HDR1 + LEN, negative)

\* `<b>initialBytesToStrip</b> = <b>3</b>`

\*

\* BEFORE DECODE (16 bytes)                      AFTER DECODE (13 bytes)

\* +-----+-----+-----+-----+      +-----+-----+-----+-----+-----+-----+

\* | HDR1 | Length | HDR2 | Actual Content |---->| HDR2 | Actual Content |

\* | 0xCA | 0x0010 | 0xFE | "HELLO, WORLD" |      | 0xFE | "HELLO, WORLD" |

\* +-----+-----+-----+-----+      +-----+-----+-----+-----+-----+-----+

\* `</pre>`

\* @see `LengthFieldPrepender`

\*/

Found in path(s):

\* `/opt/cola/permits/1698847974_1685285733.3736825/0/netty-codec-4-1-93-final-sources-`

`jar/io/netty/handler/codec/LengthFieldBasedFrameDecoder.java`

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\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/EmptyHeaders.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/Headers.java

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/DefaultHeaders.java

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\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-  
jar/io/netty/handler/codec/compression/Lz4XXHash32.java

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* /opt/cola/permits/1698847974_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/META-INF/maven/io.netty/netty-codec/pom.xml
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```

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```
* /opt/cola/permits/1698847974_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/BrotliEncoder.java
* /opt/cola/permits/1698847974_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/Zstd.java
* /opt/cola/permits/1698847974_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/BrotliDecoder.java
* /opt/cola/permits/1698847974_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/StandardCompressionOptions.java
* /opt/cola/permits/1698847974_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/ZstdOptions.java
```

\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/DeflateOptions.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/BrotliOptions.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/ZstdConstants.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/Brotli.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/CompressionOptions.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/ZstdEncoder.java  
\* /opt/cola/permits/1698847974\_1685285733.3736825/0/netty-codec-4-1-93-final-sources-jar/io/netty/handler/codec/compression/GzipOptions.java

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## 1.44 activation-api 1.2.0

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zip/com/zaxxer/hikari/pool/ProxyFactory.java
- \* /opt/cola/permits/203480980\_1651176812.86/0/hikaricp-java7-2-4-13-sources-  
zip/com/zaxxer/hikari/util/ConcurrentBag.java
- \* /opt/cola/permits/203480980\_1651176812.86/0/hikaricp-java7-2-4-13-sources-  
zip/com/zaxxer/hikari/util/SuspendResumeLock.java
- \* /opt/cola/permits/203480980\_1651176812.86/0/hikaricp-java7-2-4-13-sources-  
zip/com/zaxxer/hikari/util/JavassistProxyFactory.java

## 1.47 ant-junit 1.10.11

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## 1.48 auto-common 0.10

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\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/From\_UTF\_32\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/Transcoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/Windows\_1257Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/ISO8859\_1Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/spi/ISO\_8859\_16.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/UTF16BEEncoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/AbstractEncoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/From\_UTF8\_MAC\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/EncodingDB.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/Cp50221\_encoder\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/Eucjp2sjis\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/exception/EncodingException.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/Ptr.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/constants/PosixBracket.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/util/BytesHash.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/EUCJPEncoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/SingleByteEncoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/GenericTranscoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/TranscoderDB.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/From\_UTF\_32BE\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-

jar/org/jcodings/specific/Windows\_1252Encoding.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/transcode/TranscodeTableSupport.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/CaseFoldMapEncoding.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/EucEncoding.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/specific/BaseSJISEncoding.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/transcode/Transcoder.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/transcode/TranscoderList.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/exception/ErrorMessage.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/specific/ISO8859\_7Encoding.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/transcode/specific/To\_GB18030\_Transcoder.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/transcode/specific/From\_UTF\_16LE\_Transcoder.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/transcode/specific/Iso2022jp\_kddi\_decoder\_Transcoder.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/ISOEncoding.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/specific/UTF16LEEncoding.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/CaseFoldCodeItem.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/constants/CharacterType.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/transcode/EConvFlags.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/util/ObjHash.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/util/Hash.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/specific/GB18030Encoding.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/util/IntArrayHash.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/specific/ASCIIEncoding.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/specific/NonStrictUTF8Encoding.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/specific/ISO8859\_6Encoding.java  
 \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-  
 jar/org/jcodings/transcode/specific/To\_UTF\_16BE\_Transcoder.java

\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/Escape\_xml\_attr\_quote\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/Eucjp\_to\_stateless\_iso2022jp\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/To\_UTF\_16LE\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/ISO8859\_4Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/NonStrictEUCJPEncoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/EUCTWEncoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/exception/TranscoderException.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/exception/InternalException.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/Windows\_1253Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/IntHolder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/MultiByteEncoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/EUCKREncoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/TranscodingInstruction.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/Big5UAOEncoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/ISO8859\_9Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/ISO8859\_13Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/SJISEncoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/From\_GB18030\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/UTF8Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/Windows\_1254Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/From\_UTF\_32LE\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/EConv.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/BaseUTF8Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/ISO8859\_16Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-

jar/org/jcodings/specific/NonStrictSJISEncoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/Universal\_newline\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/ISO8859\_10Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/Iso2022jp\_kddi\_encoder\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/From\_UTF\_16BE\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/ISO8859\_8Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/unicode/UnicodeEncoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/EmacsMuleEncoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/KOI8Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/KOI8UEncoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/BIG5Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/EncodingList.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/Windows\_31JEncoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/Cp50220\_encoder\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/Sjis2eucjp\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/unicode/UnicodeProperties.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/exception/JCodingsException.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/ISO8859\_11Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/Iso2022jp\_encoder\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/To\_UTF\_16\_Transcoder.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/KOI8REncoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/ISO8859\_2Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/ISO8859\_14Encoding.java  
\* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/ascii/AsciiTables.java

- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/GBKEncoding.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/exception/CharacterPropertyException.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/BaseBIG5Encoding.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/EConvResult.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/USASCIIEncoding.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/ISO8859\_15Encoding.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/Cp50220\_decoder\_Transcoder.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/Cp50221\_decoder\_Transcoder.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/ObjPtr.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/From\_UTF\_16\_Transcoder.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/To\_UTF\_32\_Transcoder.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/Stateless\_iso2022jp\_to\_eucjp\_Transcoder.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/CodeRange.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/Windows\_1251Encoding.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/UTF32BEEncoding.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/util/CaseInsensitiveBytesHash.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/To\_UTF\_32LE\_Transcoder.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/util/IntHash.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/Windows\_1250Encoding.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/specific/To\_UTF\_32BE\_Transcoder.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/AsciiCompatibility.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/transcode/Buffer.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/CP949Encoding.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/specific/UTF32LEEncoding.java
- \* /opt/cola/permits/1606863367\_1680067730.5782158/0/jcodings-1-0-44-sources-1-jar/org/jcodings/Config.java

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* /opt/cola/permits/1606863367_1680067730.5782158/0/jcodings-1-0-44-sources-1-
jar/org/jcodings/ApplyAllCaseFoldFunction.java
* /opt/cola/permits/1606863367_1680067730.5782158/0/jcodings-1-0-44-sources-1-
jar/org/jcodings/transcode/specific/Iso2022jp_decoder_Transcoder.java
* /opt/cola/permits/1606863367_1680067730.5782158/0/jcodings-1-0-44-sources-1-
jar/org/jcodings/specific/ISO8859_3Encoding.java
* /opt/cola/permits/1606863367_1680067730.5782158/0/jcodings-1-0-44-sources-1-
jar/org/jcodings/CanBeTrailTableEncoding.java
* /opt/cola/permits/1606863367_1680067730.5782158/0/jcodings-1-0-44-sources-1-
jar/org/jcodings/util/ArrayReader.java
* /opt/cola/permits/1606863367_1680067730.5782158/0/jcodings-1-0-44-sources-1-
jar/org/jcodings/specific/ISO8859_5Encoding.java
* /opt/cola/permits/1606863367_1680067730.5782158/0/jcodings-1-0-44-sources-1-
jar/org/jcodings/specific/GB2312Encoding.java
* /opt/cola/permits/1606863367_1680067730.5782158/0/jcodings-1-0-44-sources-1-
jar/org/jcodings/specific/Big5HKSCSEncoding.java
* /opt/cola/permits/1606863367_1680067730.5782158/0/jcodings-1-0-44-sources-1-
jar/org/jcodings/specific/BaseEUCJPEncoding.java
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```

Found in path(s):

```
* /opt/cola/permits/1606863367_1680067730.5782158/0/jcodings-1-0-44-sources-1-
jar/org/jcodings/unicode/FixedWidthUnicodeEncoding.java
```

## 1.58 jaxb2-reflection 2.2.6

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\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/v2/runtime/property/Messages\_es.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/v2/runtime/reflect/Messages\_zh\_TW.properties  
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\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/api/Messages\_ja.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/v2/model/annotation/Messages\_zh\_CN.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/v2/model/impl/Messages\_fr.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
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\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/marshaller/Messages\_pt\_BR.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
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\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/v2/schemagen/Messages.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
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\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
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\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
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jar/com/sun/xml/bind/v2/schemagen/Messages\_zh\_TW.properties  
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\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-

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jar/com/sun/xml/bind/v2/runtime/Messages\_es.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/v2/runtime/Messages.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/v2/runtime/Messages\_de.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/v2/Messages\_es.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/v2/schemagen/Messages\_es.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/api/Messages\_es.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/v2/model/annotation/Messages\_zh\_TW.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
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jar/com/sun/xml/bind/marshaller/Messages\_zh\_TW.properties  
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jar/com/sun/xml/bind/v2/Messages\_zh\_CN.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/unmarshaller/Messages\_de.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/v2/schemagen/Messages\_ja.properties  
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jar/com/sun/xml/bind/v2/model/annotation/Messages\_pt\_BR.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/v2/Messages\_ja.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/marshaller/Messages.properties  
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\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/marshaller/Messages\_ko.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/v2/runtime/Messages\_it.properties  
\* /opt/cola/permits/1535154686\_1679313434.8808954/0/jaxb-impl-2-2-6-  
jar/com/sun/xml/bind/v2/model/impl/Messages\_ko.properties

## 1.59 fastdoubleparser 0.8.0

### 1.59.1 Available under license :

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## 1.60 derby 10.14.2.0

## 1.60.1 Available under license :

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" lang="en-us" xml:lang="en-us">
<!--
```

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<head>
<meta content="text/html; charset=utf-8" http-equiv="Content-Type" />
<meta name="copyright" content="(C) Copyright 2005" />
<meta name="DC.rights.owner" content="(C) Copyright 2005" />
<meta content="public" name="security" />
<meta content="index, follow" name="Robots" />
<meta http-equiv="PICS-Label" content='(PICS-1.1 "http://www.icra.org/ratingsv02.html" l gen true r (cz 1 lz 1 nz
1 oz 1 vz 1) "http://www.rsac.org/ratingsv01.html" l gen true r (n 0 s 0 v 0 l 0) "http://www.classify.org/safesurf/" l
gen true r (SS~~000 1))' />
<meta content="reference" name="DC.Type" />
<meta name="DC.Title" content="License" />
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<meta content="XHTML" name="DC.Format" />
<meta content="rdevlicense" name="DC.Identifier" />
<meta content="en-us" name="DC.Language" />
<link href="commonltr.css" type="text/css" rel="stylesheet" />
<title>License</title>
</head>
<body id="rdevlicense"><a name="rdevlicense"><!-- --></a>

<h1 class="topicTitle1">License</h1>
```

<div><p />

<div class="section"><h2 class="sectiontitle">The Apache License, Version 2.0</h2>  
<pre>

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</pre>

</div>

</div>

</body>

</html>

4

```
textLjava/lang/String;sqlStateWhenMissing<init>'(Ljava/lang/String;Ljava/lang/String;)VCodeLineNumberTableLocalVariableTablethis=Lorg/apache/derbyTesting/functionTests/tests/lang/Permission;SourceFilePermission.java ;org/apache/derbyTesting/functionTests/tests/lang/Permissionjava/lang/Object()V!Y**+*,#$ %&
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"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" lang="en-us" xml:lang="en-us">

<!--

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<meta content="text/html; charset=utf-8" http-equiv="Content-Type" />
<meta name="copyright" content="(C) Copyright 2005" />
<meta name="DC.rights.owner" content="(C) Copyright 2005" />
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<meta content="index, follow" name="Robots" />
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1 oz 1 vz 1) "http://www.rsac.org/ratingsv01.html" l gen true r (n 0 s 0 v 0 l 0) "http://www.classify.org/safesurf/" l
gen true r (SS~~000 1))' />
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<link href="commonltr.css" type="text/css" rel="stylesheet" />
<title>License</title>
</head>
<body id="rreflicense"><a name="rreflicense"><!-- --></a>

<h1 class="topictitle1">License</h1>

<div><p />

<div class="section"><h2 class="sectiontitle">The Apache License, Version 2.0</h2>
<pre>
```

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    Apache License
    Version 2.0, January 2004
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</pre>

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</html>

<?xml version="1.0" encoding="UTF-8"?>

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<html xmlns="http://www.w3.org/1999/xhtml" lang="en-us" xml:lang="en-us">

<!--

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</head>
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<div><p />
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<div class="section"><h2 class="sectiontitle">The Apache License, Version 2.0</h2>
<pre>
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</pre>

</div>

</div>

</body>

</html>

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analysis/common/src/java/net/sf/snowball  
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The snowball stopword lists in  
analysis/common/src/resources/org/apache/lucene/analysis/snowball  
were developed by Martin Porter and Richard Boulton.

The full snowball package is available from  
<http://snowball.tartarus.org/>

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analysis/common/src/org/apache/lucene/analysis/en  
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stopword list that is BSD-licensed created by Jacques Savoy. These files reside in:  
analysis/common/src/resources/org/apache/lucene/analysis/ar/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/fa/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/ro/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/bg/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/hi/stopwords.txt  
See <http://members.unine.ch/jacques.savoy/clef/index.html>.

The German,Spanish,Finnish,French,Hungarian,Italian,Portuguese,Russian and Swedish light stemmers  
(common) are based on BSD-licensed reference implementations created by Jacques Savoy and  
Ljiljana Dolamic. These files reside in:

analysis/common/src/java/org/apache/lucene/analysis/de/GermanLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/de/GermanMinimalStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/es/SpanishLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fi/FinnishLightStemmer.java  
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analysis/common/src/java/org/apache/lucene/analysis/ru/RussianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/sv/SwedishLightStemmer.java

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and Edmond Nolan.

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Kuromoji Japanese Morphological Analyzer - Apache Lucene Integration  
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=====  
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The JSON simple jar file is licensed under the Apache 2.0 License.  
No other notice covers that jar file.

```
<?xml version="1.0" encoding="UTF-8"?>  
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"  
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">  
<html xmlns="http://www.w3.org/1999/xhtml" lang="en-us" xml:lang="en-us">  
<!--
```

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```
-->
```

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<head>  
<meta content="text/html; charset=utf-8" http-equiv="Content-Type" />  
<meta name="copyright" content="(C) Copyright 2005" />  
<meta name="DC.rights.owner" content="(C) Copyright 2005" />  
<meta content="public" name="security" />  
<meta content="index, follow" name="Robots" />  
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```

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<meta content="XHTML" name="DC.Format" />
<meta content="rtunlicense" name="DC.Identifier" />
<meta content="en-us" name="DC.Language" />
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<title>License</title>
</head>
<body id="rtunlicense"><a name="rtunlicense"><!-- --></a>
```

```
<h1 class="topicTitle1">License</h1>
```

```
<div>
<div class="section"><h2 class="sectionTitle">The Apache License, Version 2.0</h2>
<pre>
```

```
        Apache License
        Version 2.0, January 2004
        http://www.apache.org/licenses/
```

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</pre>

</div>

</div>

<div />

</body>

</html>

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" lang="en-us" xml:lang="en-us">
<!--
```

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```
-->
<head>
<meta content="text/html; charset=utf-8" http-equiv="Content-Type" />
<meta name="copyright" content="(C) Copyright 2005" />
<meta name="DC.rights.owner" content="(C) Copyright 2005" />
<meta content="public" name="security" />
<meta content="index, follow" name="Robots" />
<meta http-equiv="PICS-Label" content='(PICS-1.1 "http://www.icra.org/ratingsv02.html" l gen true r (cz 1 lz 1 nz
1 oz 1 vz 1) "http://www.rsac.org/ratingsv01.html" l gen true r (n 0 s 0 v 0 l 0) "http://www.classify.org/safesurf/" l
gen true r (SS~~000 1))' />
<meta content="reference" name="DC.Type" />
<meta name="DC.Title" content="License" />
<meta content="Apache, license" name="DC.subject" />
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<meta content="XHTML" name="DC.Format" />
<meta content="radminlicense" name="DC.Identifier" />
<meta content="en-us" name="DC.Language" />
<link href="commonltr.css" type="text/css" rel="stylesheet" />
<title>License</title>
</head>
<body id="radminlicense"><a name="radminlicense"><!-- --></a>
```

```
<h1 class="topictitle1">License</h1>
```

```
<div>
<div class="section"><h2 class="sectiontitle">The Apache License, Version 2.0</h2>
</div>
```

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</pre>

</div>

</div>

</body>

</html>

<?xml version="1.0" encoding="UTF-8"?>

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"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" lang="en-us" xml:lang="en-us">

<!--

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<meta name="copyright" content="(C) Copyright 2005" />
<meta name="DC.rights.owner" content="(C) Copyright 2005" />
<meta content="public" name="security" />
<meta content="index,follow" name="Robots" />
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1 oz 1 vz 1) "http://www.rsac.org/ratingsv01.html" l gen true r (n 0 s 0 v 0 l 0) "http://www.classify.org/safesurf/" l
gen true r (SS~~000 1))' />
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<meta content="en-us" name="DC.Language" />
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<title>License</title>
</head>
<body id="rtoolslicense"><a name="rtoolslicense"><!-- --></a>
```

```
<h1 class="topictitle1">License</h1>
```

```
<div>
<div class="section"><h2 class="sectiontitle">The Apache License, Version 2.0</h2>
<pre>
```

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## 1.64 icu 71

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## Commands to generate dependency files  
GEN_DEPS.c= $(CC) -E -MM $(DEFS) $(CPPFLAGS)  
GEN_DEPS.cc= $(CXX) -E -MM $(DEFS) $(CPPFLAGS)  
  
## Flags for position independent code  
SHAREDLIBCFLAGS = -fPIC  
SHAREDLIBCXXFLAGS = -fPIC  
SHAREDLIBCPPFLAGS = -DPIC  
  
## Additional flags when building libraries and with threads  
THREADSCPPFLAGS = -D_REENTRANT  
LIBCPPFLAGS =  
  
## Compiler switch to embed a runtime search path  
LD_RPATH=  
LD_RPATH_PRE= -Wl,-rpath,  
  
## Compiler switch to embed a library name  
LD_SONAME = -Wl,-soname -Wl,$(notdir $(MIDDLE_SO_TARGET))
```

```

## Shared library options
LD_SOOPTIONS= -Wl,-Bsymbolic

## Shared object suffix
SO = so

## Non-shared intermediate object suffix
STATIC_O = ao

## Compilation rules
%.${STATIC_O}: $(srcdir)/%.c
$(COMPILE.c) $(STATICCPPFLAGS) $(STATICCFLAGS) -o $@ $<
%.o: $(srcdir)/%.c
$(COMPILE.c) $(DYNAMICCPPFLAGS) $(DYNAMICCFLAGS) -o $@ $<

%.${STATIC_O}: $(srcdir)/%.cpp
$(COMPILE.cc) $(STATICCPPFLAGS) $(STATICCXXFLAGS) -o $@ $<
%.o: $(srcdir)/%.cpp
$(COMPILE.cc) $(DYNAMICCPPFLAGS) $(DYNAMICCXXFLAGS) -o $@ $<

## Dependency rules
%.d: $(srcdir)/%.c
@echo "generating dependency information for $<"
@$(SHELL) -ec '$(GEN_DEPS.c) $< \
| sed "s^\($*\)\.o[ :]*^1.o $@ : /g\" > $@; \
[ -s $@ ] || rm -f $@'

%.d: $(srcdir)/%.cpp
@echo "generating dependency information for $<"
@$(SHELL) -ec '$(GEN_DEPS.cc) $< \
| sed "s^\($*\)\.o[ :]*^1.o $@ : /g\" > $@; \
[ -s $@ ] || rm -f $@'

## Versioned libraries rules

%.${SO}.${SO_TARGET_VERSION_MAJOR}: %.${SO}.${SO_TARGET_VERSION}
$(RM) $@ && ln -s ${<F} $@
%.${SO}: %.${SO}.${SO_TARGET_VERSION_MAJOR}
$(RM) $@ && ln -s ${*F}.${SO}.${SO_TARGET_VERSION} $@

## Bind internal references

# LDflags that pkgdata will use
BIR_LDFLAGS= -Wl,-Bsymbolic

# Dependencies [i.e. map files] for the final library
BIR_DEPS=

```

```
## Remove shared library 's'  
STATIC_PREFIX_WHEN_USED =  
STATIC_PREFIX =
```

```
## End BSD-specific setup  
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Leandro Lucarella <llucax@gmail.com>  
\* VI syntax highlighting tweaks.  
\* Fix compiler to not make output executable.

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\* Heuristic detection of sub-messages when printing unknown fields in text format.

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\* Solaris 10 + Sun Studio fixes.

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\* Slicing support for repeated scalar fields for the Python API.

Oleg Smolsky <oleg.smolsky@gmail.com>  
\* MS Visual Studio error format option.  
\* Detect unordered\_map in stl\_hash.m4.

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\* gzip/zlib I/O support.

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\* Fixed warnings about generated constructors not explicitly initializing all fields (only present with certain compiler settings).  
\* Added generation of field number constants.

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\* Fixed initialization ordering problem in logging code.

Will Pierce <willp@nuclei.com>  
\* Small patch improving performance of in Python serialization.

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\* Emacs mode for Protocol Buffers (editors/protobuf-mode.el).

Scott Stafford <scott.stafford@gmail.com>  
\* Added Swap(), SwapElements(), and RemoveLast() to Reflection interface.

Alexander Melnikov <alm@sibmail.ru>  
\* HPUX support.

Oliver Jowett <oliver.jowett@gmail.com>  
\* Detect whether zlib is new enough in configure script.  
\* Fixes for Solaris 10 32/64-bit confusion.

Evan Jones <evanj@mit.edu>  
\* Optimize Java serialization code when writing a small message to a stream.  
\* Optimize Java serialization of strings so that UTF-8 encoding happens only once per string per serialization call.  
\* Clean up some Java warnings.  
\* Fix bug with permanent callbacks that delete themselves when run.

Michael Kucharski <m.kucharski@gmail.com>  
\* Added CodedInputStream.getTotalBytesRead().

Kacper Kowalik <xarthisius.kk@gmail.com>  
\* Fixed m4/acx\_pthread.m4 problem for some Linux distributions.

William Orr <will@worrbase.com>

\* Fixed detection of sched\_yield on Solaris.

\* Added atomicops for Solaris

Andrew Paprocki <andrew@ishiboo.com>

\* Fixed minor IBM xLC compiler build issues

\* Added atomicops for AIX (POWER)

/\* Written in 2016 by David Blackman and Sebastiano Vigna (vigna@acm.org)

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Licensing Information User Manual

MySQL 8.0

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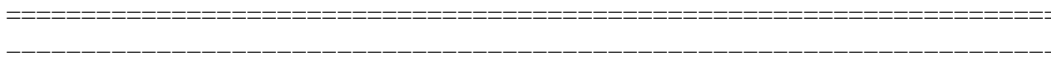
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  saslint.h auxprop.c canonusr.c checkpw.c client.c common.c config.c
  external.c saslutil.c server.c seterror.c dlopen.c
./plugins
  scram.c gssapi.c
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```
*/
```

```
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```

dtoa.c

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Google SMP patch

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Kerberos5

Kerberos5

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The implementations of GSSAPI mechglue in GSSAPI-SPNEGO in "src/lib/gssapi", including the following files:

```
lib/gssapi/generic/gssapi_err_generic.et
lib/gssapi/mechglue/g_accept_sec_context.c
lib/gssapi/mechglue/g_acquire_cred.c
lib/gssapi/mechglue/g_canon_name.c
lib/gssapi/mechglue/g_compare_name.c
lib/gssapi/mechglue/g_context_time.c
lib/gssapi/mechglue/g_delete_sec_context.c
lib/gssapi/mechglue/g_dsp_name.c
lib/gssapi/mechglue/g_dsp_status.c
```

lib/gssapi/mechglue/g\_dup\_name.c  
lib/gssapi/mechglue/g\_exp\_sec\_context.c  
lib/gssapi/mechglue/g\_export\_name.c  
lib/gssapi/mechglue/g\_glue.c  
lib/gssapi/mechglue/g\_imp\_name.c  
lib/gssapi/mechglue/g\_imp\_sec\_context.c  
lib/gssapi/mechglue/g\_init\_sec\_context.c  
lib/gssapi/mechglue/g\_initialize.c  
lib/gssapi/mechglue/g\_inquire\_context.c  
lib/gssapi/mechglue/g\_inquire\_cred.c  
lib/gssapi/mechglue/g\_inquire\_names.c  
lib/gssapi/mechglue/g\_process\_context.c  
lib/gssapi/mechglue/g\_rel\_buffer.c  
lib/gssapi/mechglue/g\_rel\_cred.c  
lib/gssapi/mechglue/g\_rel\_name.c  
lib/gssapi/mechglue/g\_rel\_oid\_set.c  
lib/gssapi/mechglue/g\_seal.c  
lib/gssapi/mechglue/g\_sign.c  
lib/gssapi/mechglue/g\_store\_cred.c  
lib/gssapi/mechglue/g\_unseal.c  
lib/gssapi/mechglue/g\_userok.c  
lib/gssapi/mechglue/g\_utils.c  
lib/gssapi/mechglue/g\_verify.c  
lib/gssapi/mechglue/gssd\_pname\_to\_uid.c  
lib/gssapi/mechglue/mglueP.h  
lib/gssapi/mechglue/oid\_ops.c  
lib/gssapi/spnego/gssapiP\_spnego.h  
lib/gssapi/spnego/spnego\_mech.c

and the initial implementation of incremental propagation, including the following new or changed files:

include/ipropr\_hdr.h  
kadmin/server/ipropr\_svc.c  
lib/kdb/ipropr.x  
lib/kdb/kdb\_convert.c  
lib/kdb/kdb\_log.c  
lib/kdb/kdb\_log.h  
lib/krb5/error\_tables/kdb5\_err.et  
slave/kpropd\_rpc.c  
slave/kproplog.c

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# Date: 2009-09-22, 16:23:42 PDT [KW]
#
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# (DUCET) for the Unicode Collation Algorithm
#
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#  
# See UTS #10, Unicode Collation Algorithm, for more information.  
#  
# Diagnostic weight ranges  
# Primary weight range: 0200..3ACA (14539)  
# Secondary weight range: 0020..0192 (371)  
# Variant secondaries: 0159..015E (6)  
# Digit secondaries: 015F..0192 (52)  
# Tertiary weight range: 0002..001F (30)  
#  
@version 5.2.0

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Licensing Information User Manual

MySQL Router 8.0

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Kerberos5

Kerberos5

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"src/lib/gssapi", including the following files:

lib/gssapi/generic/gssapi\_err\_generic.et  
lib/gssapi/mechglue/g\_accept\_sec\_context.c  
lib/gssapi/mechglue/g\_acquire\_cred.c  
lib/gssapi/mechglue/g\_canon\_name.c  
lib/gssapi/mechglue/g\_compare\_name.c  
lib/gssapi/mechglue/g\_context\_time.c  
lib/gssapi/mechglue/g\_delete\_sec\_context.c  
lib/gssapi/mechglue/g\_dsp\_name.c  
lib/gssapi/mechglue/g\_dsp\_status.c  
lib/gssapi/mechglue/g\_dup\_name.c  
lib/gssapi/mechglue/g\_exp\_sec\_context.c  
lib/gssapi/mechglue/g\_export\_name.c  
lib/gssapi/mechglue/g\_glue.c  
lib/gssapi/mechglue/g\_imp\_name.c  
lib/gssapi/mechglue/g\_imp\_sec\_context.c  
lib/gssapi/mechglue/g\_init\_sec\_context.c  
lib/gssapi/mechglue/g\_initialize.c  
lib/gssapi/mechglue/g\_inquire\_context.c  
lib/gssapi/mechglue/g\_inquire\_cred.c  
lib/gssapi/mechglue/g\_inquire\_names.c  
lib/gssapi/mechglue/g\_process\_context.c  
lib/gssapi/mechglue/g\_rel\_buffer.c  
lib/gssapi/mechglue/g\_rel\_cred.c  
lib/gssapi/mechglue/g\_rel\_name.c  
lib/gssapi/mechglue/g\_rel\_oid\_set.c  
lib/gssapi/mechglue/g\_seal.c  
lib/gssapi/mechglue/g\_sign.c  
lib/gssapi/mechglue/g\_store\_cred.c  
lib/gssapi/mechglue/g\_unseal.c  
lib/gssapi/mechglue/g\_userok.c  
lib/gssapi/mechglue/g\_utils.c  
lib/gssapi/mechglue/g\_verify.c  
lib/gssapi/mechglue/gssd\_pname\_to\_uid.c  
lib/gssapi/mechglue/mglueP.h  
lib/gssapi/mechglue/oid\_ops.c  
lib/gssapi/spnego/gssapiP\_spnego.h  
lib/gssapi/spnego/spnego\_mech.c

and the initial implementation of incremental propagation, including  
the following new or changed files:

include/iprop\_hdr.h

kadmin/server/ipropd\_svc.c  
lib/kdb/iprop.x  
lib/kdb/kdb\_convert.c  
lib/kdb/kdb\_log.c  
lib/kdb/kdb\_log.h  
lib/krb5/error\_tables/kdb5\_err.et  
slave/kpropd\_rpc.c  
slave/kproplog.c

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## 1.66 metrics 4.2.9

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Manifest-Version: 1.0  
Automatic-Module-Name: com.codahale.metrics  
Build-Jdk-Spec: 11  
Bundle-Description: Metrics is a Java library which gives you unparalleled insight into what your code does in production. Metrics provides a powerful toolkit of ways to measure the behavior of critical components in your production environment.  
Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0.html>  
Bundle-ManifestVersion: 2  
Bundle-Name: Metrics Core  
Bundle-SymbolicName: io.dropwizard.metrics.core  
Bundle-Version: 4.2.9  
Created-By: Apache Maven Bundle Plugin 5.1.4  
Export-Package: com.codahale.metrics;uses:="org.slf4j";version="4.2.9"  
Implementation-Title: Metrics Core  
Implementation-Version: 4.2.9  
Import-Package: org.slf4j;version="[1.6.0,2.0.0)"  
Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.8))"  
Tool: Bnd-5.1.1.202006162103

Found in path(s):

\* /opt/cola/permits/1295050861\_1651806904.61/0/metrics-core-4-2-9-jar/META-INF/MANIFEST.MF

## 1.67 annotations 3.0.0

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## 1.68 jackson 2.14.1

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 */
```

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```
* /opt/cola/permits/1698848086_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-
jar/com/sun/nio/sctp/Association.java
* /opt/cola/permits/1698848086_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-
jar/com/sun/nio/sctp/SctpChannel.java
* /opt/cola/permits/1698848086_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-
jar/com/sun/nio/sctp/NotificationHandler.java
* /opt/cola/permits/1698848086_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-
jar/io/netty/channel/sctp/DefaultSctpChannelConfig.java
* /opt/cola/permits/1698848086_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-
jar/io/netty/channel/sctp/SctpChannelConfig.java
* /opt/cola/permits/1698848086_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-
jar/io/netty/channel/sctp/SctpNotificationHandler.java
* /opt/cola/permits/1698848086_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-
jar/com/sun/nio/sctp/SctpSocketOption.java
* /opt/cola/permits/1698848086_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-
jar/io/netty/channel/sctp/nio/NioSctpChannel.java
* /opt/cola/permits/1698848086_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-
jar/com/sun/nio/sctp/PeerAddressChangeNotification.java
* /opt/cola/permits/1698848086_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-
jar/com/sun/nio/sctp/ShutdownNotification.java
* /opt/cola/permits/1698848086_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-
jar/com/sun/nio/sctp/MessageInfo.java
* /opt/cola/permits/1698848086_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-
jar/io/netty/channel/sctp/SctpServerChannelConfig.java
```

\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-jar/com/sun/nio/sctp/SctpServerChannel.java  
\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-jar/com/sun/nio/sctp/SendFailedNotification.java  
\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-jar/com/sun/nio/sctp/AssociationChangeNotification.java  
\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-jar/io/netty/channel/sctp/SctpChannel.java  
\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-jar/com/sun/nio/sctp/HandlerResult.java  
\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-jar/com/sun/nio/sctp/AbstractNotificationHandler.java  
\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-jar/com/sun/nio/sctp/UnsupportedOperationException.java  
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\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-jar/com/sun/nio/sctp/SctpStandardSocketOptions.java  
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\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-jar/com/sun/nio/sctp/package-info.java  
\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-jar/io/netty/channel/sctp/SctpMessage.java

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\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-jar/io/netty/channel/sctp/oio/package-info.java

\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-

jar/io/netty/handler/codec/sctp/SctpOutboundByteStreamHandler.java  
\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-  
jar/io/netty/channel/sctp/oio/OioSctpChannel.java  
\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-  
jar/io/netty/channel/sctp/nio/package-info.java  
\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-  
jar/io/netty/channel/sctp/oio/OioSctpServerChannel.java  
\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-  
jar/io/netty/channel/sctp/package-info.java  
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jar/io/netty/handler/codec/sctp/SctpInboundByteStreamHandler.java  
\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-  
jar/io/netty/handler/codec/sctp/SctpMessageCompletionHandler.java  
\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-  
jar/io/netty/handler/codec/sctp/package-info.java  
\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-  
jar/io/netty/handler/codec/sctp/SctpMessageToMessageDecoder.java  
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jar/io/netty/channel/sctp/SctpChannelOption.java
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*/
```

Found in path(s):

```
* /opt/cola/permits/1698848086_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-
jar/io/netty/channel/sctp/DefaultSctpServerChannelConfig.java
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```
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```

Found in path(s):

\* /opt/cola/permits/1698848086\_1685285729.8544004/0/netty-transport-sctp-4-1-93-final-sources-jar/META-INF/maven/io.netty/netty-transport-sctp/pom.xml

## 1.70 xz-java 1.9

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```
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jar/org/jctools/queues/spec/Ordering.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/queues/atomic/SpScUnboundedAtomicArrayQueue.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/queues/atomic/SpmcAtomicArrayQueue.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/queues/MessagePassingQueueUtil.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/queues/atomic/MpmcAtomicArrayQueue.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/util/UnsafeJvmInfo.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/queues/atomic/LinkedQueueAtomicNode.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/queues/SpScLinkedQueue.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/queues/MpscUnboundedXaddArrayQueue.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/queues/spec/Preference.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
```



jar/org/jctools/queues/atomic/MpscAtomicArrayQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/MessagePassingQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/SupportsIterator.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/MpmcUnboundedXaddArrayQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/MpscGrowableArrayQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/atomic/BaseSpSCLinkedAtomicArrayQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/atomic/AtomicQueueFactory.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/MpmcArrayQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/atomic/SpSCAtomicArrayQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/atomic/SpSCLinkedAtomicQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/SpMCArrayQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/maps/AbstractEntry.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/MpmcUnboundedXaddChunk.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/MpscChunkedArrayQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/maps/NonBlockingHashMapLong.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/atomic/MpscChunkedAtomicArrayQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/ConcurrentSequencedCircularArrayQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/util/UnsafeLongArrayAccess.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/MpscBlockingConsumerArrayQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/atomic/BaseMpscLinkedAtomicArrayQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/maps/NonBlockingHashMap.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/BaseMpscLinkedArrayQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/atomic/MpscGrowableAtomicArrayQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/maps/NonBlockingIdentityHashMap.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-

jar/org/jctools/queues/BaseLinkedQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/util/InternalAPI.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/maps/NonBlockingHashSet.java  
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jar/org/jctools/util/Pow2.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/spec/ConcurrentQueueSpec.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/atomic/SpSCChunkedAtomicArrayQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/maps/ConcurrentAutoTable.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
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\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
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\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
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\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/MpscCompoundQueue.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
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\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
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\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
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\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
jar/org/jctools/queues/QueueFactory.java  
\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
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jar/org/jctools/util/UnsafeAccess.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
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* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
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* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/util/RangeUtil.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/queues/package-info.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/queues/BaseSpSCLinkedListArrayQueue.java
No license file was found, but licenses were detected in source scan.

```

```

<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/maven-v4_0_0.xsd">
  <modelVersion>4.0.0</modelVersion>

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  <artifactId>jctools-core</artifactId>
  <groupId>org.jctools</groupId>
  <version>3.1.0</version>
  <name>Java Concurrency Tools Core Library</name>
  <description>Java Concurrency Tools Core Library</description>
  <packaging>bundle</packaging>

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  <dependencies>
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    <dependency>
      <groupId>junit</groupId>
      <artifactId>junit</artifactId>
      <version>${junit.version}</version>
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    </dependency>

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    <dependency>
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      <artifactId>guava-testlib</artifactId>

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</configuration>
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<configuration>
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<Import-Package>sun.misc;resolution:=optional</Import-Package>
</instructions>
</configuration>
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<groupId>org.apache.maven.plugins</groupId>
<artifactId>maven-source-plugin</artifactId>
<version>3.2.0</version>
<executions>
<execution>
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<phase>verify</phase>
<goals>
<goal>jar-no-fork</goal>
</goals>
</execution>
</executions>
</plugin>
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<groupId>org.apache.maven.plugins</groupId>
<artifactId>maven-javadoc-plugin</artifactId>
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</additionalOptions>
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</build>

<distributionManagement>
<repository>
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<name>jctools-jctools</name>
<url>https://api.bintray.com/maven/jctools/jctools/jctools-core/;publish=1</url>
</repository>
</distributionManagement>

<url>https://github.com/JCTools</url>
<inceptionYear>2013</inceptionYear>

<licenses>
<license>
<name>Apache License, Version 2.0</name>
<url>http://www.apache.org/licenses/LICENSE-2.0.txt</url>
<distribution>repo</distribution>
</license>
</licenses>

<scm>
<url>https://github.com/JCTools/JCTools</url>
<connection>scm:git:https://github.com/JCTools/JCTools</connection>
<tag>HEAD</tag>
</scm>

<developers>
<developer>
<url>https://github.com/nitsanw</url>
</developer>
<developer>
<url>https://github.com/mjpt777</url>
</developer>
<developer>

```

```

    <url>https://github.com/RichardWarburton</url>
  </developer>
</developer>
  <url>https://github.com/kay</url>
</developer>
</developer>
  <url>https://github.com/franz1981</url>
</developer>
</developers>

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  <maven>3.5.0</maven>
</prerequisites>

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  <java.version>1.6</java.version>
  <java.test.version>1.8</java.test.version>

  <maven.compiler.source>${java.version}</maven.compiler.source>
  <maven.compiler.target>${java.version}</maven.compiler.target>
  <maven.compiler.testSource>${java.test.version}</maven.compiler.testSource>
  <maven.compiler.testTarget>${java.test.version}</maven.compiler.testTarget>

  <hamcrest.version>1.3</hamcrest.version>
  <junit.version>4.12</junit.version>
  <guava-testlib.version>21.0</guava-testlib.version>
</properties>
</project>

```

Found in path(s):

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* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-jar/META-
INF/maven/org.jctools/jctools-core/pom.xml

```

## 1.74 mime-pull 1.9.13

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```

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 */

```

```
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```

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## Source Code

The project maintains the following source code repositories:

- \* <https://github.com/eclipse-ee4j/metro-xmlstreambuffer>
- \* <https://github.com/eclipse-ee4j/metro-policy>
- \* <https://github.com/eclipse-ee4j/metro-wsit>
- \* <https://github.com/eclipse-ee4j/metro-mimepull>
- \* <https://github.com/eclipse-ee4j/metro-ws-test-harness>
- \* <https://github.com/eclipse-ee4j/metro-package-rename-task>
- \* <https://github.com/eclipse-ee4j/metro-jax-ws>
- \* <https://github.com/eclipse-ee4j/metro-saaj>
- \* <https://github.com/eclipse-ee4j/metro-jwsdp-samples>
- \* <https://github.com/eclipse-ee4j/jax-rpc-ri>

## Third-party Content

This project leverages the following third party content.

addressing.xml Version: 2004/10 (n/a)

- \* License: W3C
- \* Project: <https://www.w3.org/Submission/ws-addressing/>
- \* Source: <http://schemas.xmlsoap.org/ws/2004/08/addressing/>

ant-launcher (1.10.2)

- \* License: Apache-2.0 AND SAX-PD AND W3C
- \* Project: <https://ant.apache.org/>
- \* Source: <http://central.maven.org/maven2/org/apache/ant/ant-launcher/1.10.2/ant-launcher-1.10.2-sources.jar>

Apache Ant (1.6)

- \* License: Apache-1.1
- \* Project: <https://ant.apache.org/>
- \* Source: <https://repo1.maven.org/maven2/org/apache/ant/ant/1.6/ant-1.6-sources.jar>

Apache Ant (1.10.2)

- \* License: Apache-2.0 AND W3C AND LicenseRef-Public-Domain

commons-logging (1.1.2)

- \* License: Apache-2.0
- \* Project: <https://commons.apache.org/proper/commons-logging/>
- \* Source: <http://central.maven.org/maven2/commons-logging/commons-logging/1.1.2/commons-logging-1.1.2-sources.jar>

JUnit (4.12)

- \* License: Eclipse Public License

maven-core (3.5.2)

- \* License: Apache-2.0

maven-plugin-annotations (3.5.1)

- \* License: Apache-2.0
- \* Project: <https://maven.apache.org/plugin-tools/maven-plugin-annotations/project-info.html>
- \* Source: <https://github.com/apache/maven-plugin-tools/tree/maven-plugin-tools-3.5.1/maven-plugin-annotations>



maven-plugin-api (3.5.2)

\* License: Apache-2.0

\* Project: <https://maven.apache.org/>

\* Source: <https://github.com/apache/maven/tree/master/maven-plugin-api>

maven-resolver-api (1.1.1)

\* License: Apache-2.0

maven-resolver-util (1.1.1)

\* License: Apache-2.0

maven-settings (3.5.2)

\* License: Apache-2.0

mex.xsd Version: 2004/09 (n/a)

\* License: Oasis Style

\* Project: <https://www.w3.org/Submission/WS-MetadataExchange/#appendix-II>

\* Source: <http://schemas.xmlsoap.org/ws/2004/09/mex/MetadataExchange.xsd>

plexus-utils (3.1.0)

\* License: Apache- 2.0 or Apache- 1.1 or BSD or Public Domain or Indiana University Extreme! Lab Software License V1.1.1 (Apache 1.1 style)

relaxng-datatype (1.0)

\* License: New BSD license

stax2-api (4.1)

\* License: Pending

\* Project: <https://github.com/FasterXML/stax2-api>

\* Source:

<http://central.maven.org/maven2/org/codehaus/woodstox/stax2-api/4.1/stax2-api-4.1-sources.jar>

testng (6.14.2)

\* License: Apache-2.0 AND MIT

\* Project: <https://testng.org/doc/index.html>

\* Source: <https://github.com/cbeust/testng>

woodstox-core-asl (4.4.1)

\* License: Apache-2.0

woodstox-core-asl (5.1.0)

\* License: Pending

\* Project: <https://github.com/FasterXML/woodstox>

\* Source: <https://github.com/FasterXML/woodstox>

ws-addr.wsd (1.0)

\* License: W3C

\* Project: <https://www.w3.org/2005/08/addressing/>

\* Source: <https://www.w3.org/2006/03/addressing/ws-addr.xsd>

wsat.xsd Version: 2004/10 (n/a)

\* License: Oasis Style

\* Project: <http://schemas.xmlsoap.org/ws/2004/10/wsat/>

\* Source: <http://schemas.xmlsoap.org/ws/2004/10/wsat/wsat.xsd>

wscor.xsd (1.0)

\* License: OASIS Style

wscor.xsd (1.1)

\* License: Oasis (Custom)

\* Project: <http://docs.oasis-open.org/ws-tx/wscor/2006/06>

\* Source:

<http://docs.oasis-open.org/ws-tx/wscor/2006/06/wstx-wscor-1.1-schema-200701.xsd>

wrm Version: 2005/02 (n/a)

\* License: Oasis (Custom)

\* Project: <http://schemas.xmlsoap.org/ws/2005/02/rm/>

\* Source:

<http://schemas.xmlsoap.org/ws/2005/02/rm/wrm.xsd>;%20<http://schemas.xmlsoap.org/ws/2005/02/rm/wrm-policy.xsd>

wrm.xsd (1.2)

\* License: Oasis

wstx-wsat.xsd (1.1)

\* License: Oasis (Custom)

xmlsec (1.5.8)

\* License: Apache-2.0

\* Project: <http://santuario.apache.org/>

\* Source:

<https://repo1.maven.org/maven2/org/apache/santuario/xmlsec/1.5.8/xmlsec-1.5.8-sources.jar>

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```
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```

-->

Found in path(s):

\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/META-INF/maven/io.netty/netty-common/pom.xml

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xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/maven-v4_0_0.xsd">
  <modelVersion>4.0.0</modelVersion>
```

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  <artifactId>jctools-core</artifactId>
  <groupId>org.jctools</groupId>
  <version>3.1.0</version>
  <name>Java Concurrency Tools Core Library</name>
  <description>Java Concurrency Tools Core Library</description>
  <packaging>bundle</packaging>
```

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  <dependencies>
    <dependency>
      <groupId>org.hamcrest</groupId>
      <artifactId>hamcrest-all</artifactId>
      <version>${hamcrest.version}</version>
      <scope>test</scope>
    </dependency>
```

```
    <dependency>
      <groupId>junit</groupId>
      <artifactId>junit</artifactId>
      <version>${junit.version}</version>
      <scope>test</scope>
    </dependency>
```

```
    <dependency>
      <groupId>com.google.guava</groupId>
      <artifactId>guava-testlib</artifactId>
      <version>${guava-testlib.version}</version>
      <scope>test</scope>
    </dependency>
  </dependencies>
```

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  <build>
    <plugins>
      <plugin>
        <groupId>org.apache.maven.plugins</groupId>
        <artifactId>maven-surefire-plugin</artifactId>
        <version>3.0.0-M3</version>
        <configuration>
          <includes>
```

```

    <include>*/</include>
  </includes>
</configuration>
</plugin>
<plugin>
  <groupId>org.apache.felix</groupId>
  <artifactId>maven-bundle-plugin</artifactId>
  <version>4.2.1</version>
  <extensions>>true</extensions>
  <configuration>
    <instructions>
      <Import-Package>sun.misc;resolution:=optional</Import-Package>
    </instructions>
  </configuration>
</plugin>
<plugin>
  <groupId>org.apache.maven.plugins</groupId>
  <artifactId>maven-source-plugin</artifactId>
  <version>3.2.0</version>
  <executions>
    <execution>
      <id>attach-sources</id>
      <phase>verify</phase>
      <goals>
        <goal>jar-no-fork</goal>
      </goals>
    </execution>
  </executions>
</plugin>
<plugin>
  <groupId>org.apache.maven.plugins</groupId>
  <artifactId>maven-javadoc-plugin</artifactId>
  <version>3.1.1</version>
  <configuration>
    <additionalOptions>
      <additionalOption>-Xdoclint:none</additionalOption>
    </additionalOptions>
    <source>8</source>
  </configuration>
  <executions>
    <execution>
      <id>attach-javadocs</id>
      <goals>
        <goal>jar</goal>
      </goals>
    </execution>
  </executions>
</plugin>

```

```

</plugins>
</build>

<distributionManagement>
  <repository>
    <id>bintray-jctools-jctools</id>
    <name>jctools-jctools</name>
    <url>https://api.bintray.com/maven/jctools/jctools/jctools-core/?publish=1</url>
  </repository>
</distributionManagement>

<url>https://github.com/JCTools</url>
<inceptionYear>2013</inceptionYear>

<licenses>
  <license>
    <name>Apache License, Version 2.0</name>
    <url>http://www.apache.org/licenses/LICENSE-2.0.txt</url>
    <distribution>repo</distribution>
  </license>
</licenses>

<scm>
  <url>https://github.com/JCTools/JCTools</url>
  <connection>scm:git:https://github.com/JCTools/JCTools</connection>
  <tag>HEAD</tag>
</scm>

<developers>
  <developer>
    <url>https://github.com/nitsanw</url>
  </developer>
  <developer>
    <url>https://github.com/mjpt777</url>
  </developer>
  <developer>
    <url>https://github.com/RichardWarburton</url>
  </developer>
  <developer>
    <url>https://github.com/kay</url>
  </developer>
  <developer>
    <url>https://github.com/franz1981</url>
  </developer>
</developers>

<prerequisites>
  <maven>3.5.0</maven>

```

</prerequisites>

<properties>

<project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>

<java.version>1.6</java.version>

<java.test.version>1.8</java.test.version>

<maven.compiler.source>\${java.version}</maven.compiler.source>

<maven.compiler.target>\${java.version}</maven.compiler.target>

<maven.compiler.testSource>\${java.test.version}</maven.compiler.testSource>

<maven.compiler.testTarget>\${java.test.version}</maven.compiler.testTarget>

<hamcrest.version>1.3</hamcrest.version>

<junit.version>4.12</junit.version>

<guava-testlib.version>21.0</guava-testlib.version>

</properties>

</project>

Found in path(s):

\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/META-INF/maven/org.jctools/jctools-core/pom.xml

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\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/logging/CommonsLogger.java  
 \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/logging/JdkLogger.java  
 \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/logging/Log4JLogger.java  
 \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/logging/InternalLogger.java

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\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/ThreadExecutorMap.java  
 \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/ObjectPool.java  
 \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-

jar/io/netty/util/internal/svm/PlatformDependentSubstitution.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/internal/svm/package-info.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/internal/svm/CleanerJava6Substitution.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/internal/svm/PlatformDependent0Substitution.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/internal/Hidden.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/internal/svm/UnsafeRefArrayAccessSubstitution.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/internal/ReferenceCountUpdater.java  
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jar/io/netty/util/ResourceLeakHint.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/internal/NativeLibraryLoader.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/internal/IntegerHolder.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/internal/InternalThreadLocalMap.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/ThreadDeathWatcher.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/concurrent/PromiseAggregator.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/AsciiString.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/concurrent/FastThreadLocal.java

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* /opt/cola/permits/1743888310_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/UnpaddedInternalThreadLocalMap.java
* /opt/cola/permits/1743888310_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/concurrent/PromiseNotifier.java
* /opt/cola/permits/1743888310_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/DomainNameMapping.java
* /opt/cola/permits/1743888310_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/Mapping.java
```

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```
* /opt/cola/permits/1743888310_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/META-INF/native-image/io.netty/netty-common/native-image.properties
```

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* /opt/cola/permits/1743888310_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/NetUtilInitializations.java
```

```
* /opt/cola/permits/1743888310_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/DomainWildcardMappingBuilder.java
```

```
* /opt/cola/permits/1743888310_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/NetUtilSubstitutions.java
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\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/DefaultPriorityQueue.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/concurrent/ThreadProperties.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/PriorityQueueNode.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/LongCounter.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/concurrent/AbstractScheduledEventExecutor.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/DomainMappingBuilder.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/AsyncMapping.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/HashingStrategy.java

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- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/concurrent/UnorderedThreadPoolEventExecutor.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/IntSupplier.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/MacAddressUtil.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/ConstantTimeUtils.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/ResourceLeakTracker.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/PromiseNotificationUtil.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/NativeLibraryUtil.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/ResourceLeakDetectorFactory.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/concurrent/OrderedEventExecutor.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/OutOfDirectMemoryError.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/BooleanSupplier.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/SocketUtils.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/concurrent/PromiseCombiner.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/concurrent/UnaryPromiseNotifier.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/concurrent/DefaultEventExecutorChooserFactory.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/concurrent/EventExecutorChooserFactory.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/concurrent/RejectedExecutionHandlers.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/logging/Log4J2Logger.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/logging/Log4J2LoggerFactory.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/ThrowableUtil.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/UnstableApi.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/concurrent/RejectedExecutionHandler.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/concurrent/NonStickyEventExecutorGroup.java
- \* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-

jar/io/netty/util/DomainNameMappingBuilder.java

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\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/Cleaner.java

\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/internal/CleanerJava9.java

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\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-

jar/io/netty/util/concurrent/EventExecutor.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/HashedWheelTimer.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/internal/logging/Slf4JLoggerFactory.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/concurrent/SucceededFuture.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/NetUtil.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/AttributeKey.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/internal/logging/CommonsLoggerFactory.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/AbstractConstant.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/internal/SystemPropertyUtil.java  
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jar/io/netty/util/IllegalReferenceCountException.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/concurrent/DefaultEventExecutor.java  
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jar/io/netty/util/concurrent/BlockingOperationException.java  
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jar/io/netty/util/concurrent/MultithreadEventExecutorGroup.java  
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jar/io/netty/util/Timer.java  
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jar/io/netty/util/internal/logging/InternalLogLevel.java  
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jar/io/netty/util/internal/logging/Slf4JLogger.java  
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jar/io/netty/util/concurrent/FailedFuture.java  
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jar/io/netty/util/Signal.java  
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jar/io/netty/util/AttributeMap.java  
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jar/io/netty/util/internal/logging/Log4JLoggerFactory.java  
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jar/io/netty/util/Constant.java  
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jar/io/netty/util/concurrent/DefaultEventExecutorGroup.java  
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jar/io/netty/util/concurrent/SingleThreadEventExecutor.java  
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jar/io/netty/util/DefaultAttributeMap.java  
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jar/io/netty/util/package-info.java  
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jar/io/netty/util/concurrent/GlobalEventExecutor.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-  
jar/io/netty/util/internal/PlatformDependent.java  
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jar/io/netty/util/Timeout.java

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jar/io/netty/util/collection/IntCollections.java

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jar/io/netty/util/collection/IntObjectMap.java



\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/collection/ShortObjectHashMap.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/collection/ByteObjectHashMap.java  
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\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/collection/CharObjectHashMap.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/collection/ByteObjectMap.java  
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\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/collection/CharObjectMap.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/collection/IntObjectHashMap.java

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io.netty.util.internal.Hidden\$NettyBlockHoundIntegration

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jar/io/netty/util/internal/SuppressJava6Requirement.java
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jar/io/netty/util/internal/MathUtil.java
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\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/concurrent/CompleteFuture.java  
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\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/concurrent/PromiseTask.java  
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jar/io/netty/util/internal/RecyclableArrayList.java  
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jar/io/netty/util/internal/ResourcesUtil.java

\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-

jar/io/netty/util/ByteProcessorUtils.java

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\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/SuppressForbidden.java  
\* /opt/cola/permits/1743888310\_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-jar/io/netty/util/NettyRuntime.java

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jar/io/netty/util/internal/logging/FormattingTuple.java
* /opt/cola/permits/1743888310_1689253535.0491397/0/netty-common-4-1-93-final-sources-1-
jar/io/netty/util/internal/logging/MessageFormatter.java

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\* /opt/cola/permits/1268277660\_1644387356.91/0/groovy-sql-3-0-9-sources-jar/groovy/sql/GroovyResultSetProxy.java

\* /opt/cola/permits/1268277660\_1644387356.91/0/groovy-sql-3-0-9-sources-jar/groovy/sql/ResultSetMetaDataWrapper.java

\* /opt/cola/permits/1268277660\_1644387356.91/0/groovy-sql-3-0-9-sources-jar/groovy/sql/BatchingPreparedStatementWrapper.java

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* /opt/cola/permits/1268277660_1644387356.91/0/groovy-sql-3-0-9-sources-jar/groovy/sql/SqlWhereVisitor.java
* /opt/cola/permits/1268277660_1644387356.91/0/groovy-sql-3-0-9-sources-jar/groovy/sql/SqlWithParams.java
* /opt/cola/permits/1268277660_1644387356.91/0/groovy-sql-3-0-9-sources-
jar/org/apache/groovy/sql/extensions/SqlExtensions.java
* /opt/cola/permits/1268277660_1644387356.91/0/groovy-sql-3-0-9-sources-
jar/groovy/sql/GroovyResultSetExtension.java
* /opt/cola/permits/1268277660_1644387356.91/0/groovy-sql-3-0-9-sources-jar/groovy/sql/CallResultSet.java
* /opt/cola/permits/1268277660_1644387356.91/0/groovy-sql-3-0-9-sources-jar/groovy/sql/SqlOrderByVisitor.java
* /opt/cola/permits/1268277660_1644387356.91/0/groovy-sql-3-0-9-sources-jar/groovy/sql/DataSet.java
* /opt/cola/permits/1268277660_1644387356.91/0/groovy-sql-3-0-9-sources-jar/groovy/sql/GroovyResultSet.java
* /opt/cola/permits/1268277660_1644387356.91/0/groovy-sql-3-0-9-sources-
jar/groovy/sql/ExtractIndexAndSql.java
* /opt/cola/permits/1268277660_1644387356.91/0/groovy-sql-3-0-9-sources-
jar/groovy/sql/ResultSetOutParameter.java
* /opt/cola/permits/1268277660_1644387356.91/0/groovy-sql-3-0-9-sources-
jar/groovy/sql/BatchingStatementWrapper.java
* /opt/cola/permits/1268277660_1644387356.91/0/groovy-sql-3-0-9-sources-jar/groovy/sql/OutParameter.java
* /opt/cola/permits/1268277660_1644387356.91/0/groovy-sql-3-0-9-sources-jar/groovy/sql/GroovyRowResult.java
* /opt/cola/permits/1268277660_1644387356.91/0/groovy-sql-3-0-9-sources-jar/groovy/sql/ExpandedVariable.java
```

## 1.77 groovy-ant 3.0.9

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Found in path(s):

- \* /opt/cola/permits/1551849020\_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-jar/groovy/ant/antlib.xml
- \* /opt/cola/permits/1551849020\_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-jar/org/codehaus/groovy/antlib.xml
- \* /opt/cola/permits/1551849020\_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-jar/org/codehaus/groovy/ant/package.html

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- \* /opt/cola/permits/1551849020\_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-jar/org/codehaus/groovy/ant/LoggingHelper.java
- \* /opt/cola/permits/1551849020\_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-jar/org/codehaus/groovy/ant/AntProjectPropertiesDelegate.java
- \* /opt/cola/permits/1551849020\_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-jar/org/codehaus/groovy/ant/RootLoaderRef.java
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- \* /opt/cola/permits/1551849020\_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-jar/groovy/util/FileNameFinder.groovy
- \* /opt/cola/permits/1551849020\_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-jar/org/codehaus/groovy/ant/FileSystemCompilerFacade.java
- \* /opt/cola/permits/1551849020\_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-jar/org/codehaus/groovy/ant/GenerateStubsTask.java
- \* /opt/cola/permits/1551849020\_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-jar/groovy/util/AntBuilder.java
- \* /opt/cola/permits/1551849020\_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-

```
jar/org/codehaus/groovy/ant/Groovydoc.java
* /opt/cola/permits/1551849020_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-
jar/org/codehaus/groovy/ant/UberCompileTask.java
* /opt/cola/permits/1551849020_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-
jar/org/codehaus/groovy/ant/Groovyc.java
* /opt/cola/permits/1551849020_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-
jar/org/codehaus/groovy/ant/VerifyClass.java
* /opt/cola/permits/1551849020_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-
jar/groovy/ant/FileNameFinder.groovy
* /opt/cola/permits/1551849020_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-
jar/org/codehaus/groovy/ant/Groovy.java
* /opt/cola/permits/1551849020_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-
jar/groovy/ant/AntBuilder.java
* /opt/cola/permits/1551849020_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-
jar/org/codehaus/groovy/ant/FileScanner.java
* /opt/cola/permits/1551849020_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-
jar/org/codehaus/groovy/ant/GroovycTask.java
```

## 1.78 lz4 1.9.3

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Upstream-Name: liblz4

Upstream-Contact: Yann Collet <[Cyan4973@github.com](mailto:Cyan4973@github.com)>

Source: <https://github.com/lz4/lz4>

Files: \*

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# 1.79 jaxb-core 2.2.6

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## 1.80 joni 2.1.29

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```

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\* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/Option.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/Syntax.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/Config.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/Token.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/constants/internal/StringType.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/Region.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ast/QuantifierNode.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/exception/ValueException.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ArrayCompiler.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ast/CTypeNode.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/UnsetAddrList.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ByteCodePrinter.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ast/Node.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/exception/SyntaxException.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/constants/internal/AnchorType.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/Parser.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/OptEnvironment.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/Matcher.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/StackMachine.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/CodeRangeBuffer.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ast/ListNode.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/exception/JOniException.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/OptAnchorInfo.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/constants/internal/EncloseType.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/constants/internal/StackPopLevel.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/constants/internal/OPSize.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ScannerSupport.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/WarnCallback.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ast/AnchorNode.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ApplyCaseFoldArg.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ast/StateNode.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/constants/internal/StackType.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/MinMaxLen.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/constants/internal/TargetInfo.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/Analyser.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ApplyCaseFold.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ScanEnvironment.java  
 \* /opt/cola/permits/1606864788\_1679439951.658974/0/joni-2-1-29-sources-1-

```

jar/org/joni/constants/internal/Traverse.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ast/AnyCharNode.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/OptExactInfo.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-
jar/org/joni/constants/internal/NodeStatus.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-
jar/org/joni/exception/InternalException.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/NativeMachine.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ast/BackRefNode.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ast/CallNode.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-
jar/org/joni/exception/ErrorMessage.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ByteCodeMachine.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/Regex.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-
jar/org/joni/constants/internal/TokenType.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/Compiler.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/BitSet.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-
jar/org/joni/constants/internal/Arguments.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/OptMapInfo.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-
jar/org/joni/constants/SyntaxProperties.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/StackEntry.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/CaptureTreeNode.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/Search.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/BitStatus.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ast/CClassNode.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ast/StringNode.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/MatcherFactory.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/ast/EncloseNode.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/constants/MetaChar.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/Lexer.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-
jar/org/joni/constants/internal/OPCode.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-
jar/org/joni/constants/internal/NodeType.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/NodeOptInfo.java
* /opt/cola/permits/1606864788_1679439951.658974/0/joni-2-1-29-sources-1-jar/org/joni/NameEntry.java

```

# 1.81 groovy-groovydoc 3.0.9

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Found in path(s):

- \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/gstringTemplates/topLevel/allclasses-frame.html
- \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/gstringTemplates/packageLevel/packageDocStructuredData.xml
- \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/gstringTemplates/topLevel/deprecated-list.html
- \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/gstringTemplates/classLevel/classDocName.html
- \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/gstringTemplates/topLevel/index-all.html
- \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/gstringTemplates/topLevel/overview-frame.html
- \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/gstringTemplates/classLevel/classDocStructuredData.xml
- \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/gstringTemplates/topLevel/help-doc.html
- \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/gstringTemplates/packageLevel/package-summary.html
- \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/groovydoc/package.html
- \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/package.html
- \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/gstringTemplates/packageLevel/package-frame.html
- \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/gstringTemplates/topLevel/rootDocStructuredData.xml
- \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/gstringTemplates/topLevel/overview-summary.html
- \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/gstringTemplates/topLevel/index.html

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 */
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* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/groovydoc/GroovyRootDoc.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/groovydoc/GroovyExecutableMemberDoc.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/GroovyDocParserI.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyClassDoc.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/FileSystemResourceManager.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
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* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/ClasspathResourceManager.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/apache/groovy/antlr/GroovydocVisitor.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/groovydoc/GroovyProgramElementDoc.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/ArrayClassDocWrapper.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/groovydoc/GroovyTag.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/groovydoc/GroovyParameter.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyMemberDoc.java
```



\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/antlr4/GroovyDocJavaVisitor.java  
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\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyPackageDoc.java  
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\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/groovydoc/GroovyConstructorDoc.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/FileOutputTool.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/groovydoc/GroovyFieldDoc.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyProgramElementDoc.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyClassDocAssembler.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyType.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyExecutableMemberDoc.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyMethodDoc.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/GroovyDocParser.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/OutputTool.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/gstringTemplates/GroovyDocTemplateInfo.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyAnnotationRef.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/groovydoc/GroovyPackageDoc.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/GroovyDocTool.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/groovydoc/GroovyMethodDoc.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/ResourceManager.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/groovydoc/GroovyMemberDoc.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/groovydoc/GroovyDoc.java  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/Main.groovy  
\* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyParameter.java

```
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/groovydoc/GroovyClassDoc.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyRootDoc.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/groovydoc/GroovyAnnotationRef.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/GroovyRootDocBuilder.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/groovydoc/GroovyType.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/LinkArgument.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/apache/groovy/groovydoc/tools/GroovyDocUtil.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyConstructorDoc.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/ExternalGroovyClassDoc.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/MockOutputTool.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/GroovyDocWriter.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyTag.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyFieldDoc.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/GroovyDocTemplateEngine.java
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyDoc.java
No license file was found, but licenses were detected in source scan.
```

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```

Found in path(s):

```
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jar/org/codehaus/groovy/tools/groovydoc/Main.properties
No license file was found, but licenses were detected in source scan.
```

```
/*! normalize.css v2.1.0 | MIT License | git.io/normalize */
```

Found in path(s):

```
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
jar/org/codehaus/groovy/tools/groovydoc/gstringTemplates/topLevel/styleSheet.css
```

# 1.82 javax-ws-rs-api 2.0.1

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MySQL Connector/J 8.0

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JUnit 5

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# 1.86 jetty-continuation 9.4.51.v20230217

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Eclipse

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\* org.eclipse.jetty.orbit:org.eclipse.jdt.core

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\* org.eclipse.jetty.orbit:javafx.security.auth.message

The following artifacts are EPL and CDDL 1.0.

\* org.eclipse.jetty.orbit:javafx.mail.glassfish

-----

Oracle

The following artifacts are CDDL + GPLv2 with classpath exception.

<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

\* javax.servlet:javax.servlet-api

\* javax.annotation:javax.annotation-api

\* javax.transaction:javax.transaction-api

\* javax.websocket:javax.websocket-api

-----

Oracle OpenJDK

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\* java.sun.security.ssl

These artifacts replace/modify OpenJDK classes. The modifications are hosted at github and both modified and original are under GPL v2 with classpath exceptions.

<http://openjdk.java.net/legal/gplv2+ce.html>

-----

OW2

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org.ow2.asm:asm-commons

org.ow2.asm:asm

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Apache

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org.apache.taglibs:taglibs-standard-spec  
org.apache.taglibs:taglibs-standard-impl

-----

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org.mortbay.jasper:apache-jsp  
org.apache.tomcat:tomcat-jasper  
org.apache.tomcat:tomcat-juli  
org.apache.tomcat:tomcat-jsp-api  
org.apache.tomcat:tomcat-el-api  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-api  
org.apache.tomcat:tomcat-util-scan  
org.apache.tomcat:tomcat-util

org.mortbay.jasper:apache-el  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-el-api

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Mortbay

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<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

org.eclipse.jetty.toolchain:jetty-schemas

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Assorted

The UnixCrypt.java code implements the one way cryptography used by Unix systems for simple password protection. Copyright 1996 Aki Yoshida, modified April 2001 by Iris Van den Broeke, Daniel Deville.

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# 1.87 re2j 1.2

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```
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```

Found in path(s):

```
* /opt/cola/permits/1157317048_1619537047.34/0/re2j-1-2-sources-1-jar/com/google/re2j/Matcher.java
```

```
* /opt/cola/permits/1157317048_1619537047.34/0/re2j-1-2-sources-1-jar/com/google/re2j/Pattern.java
```

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```

```
* /opt/cola/permits/1157317048_1619537047.34/0/re2j-1-2-sources-1-jar/com/google/re2j/Regexp.java
```

```
* /opt/cola/permits/1157317048_1619537047.34/0/re2j-1-2-sources-1-jar/com/google/re2j/Utils.java
```

```
* /opt/cola/permits/1157317048_1619537047.34/0/re2j-1-2-sources-1-jar/com/google/re2j/Machine.java
```

```
* /opt/cola/permits/1157317048_1619537047.34/0/re2j-1-2-sources-1-jar/com/google/re2j/Inst.java
```

```
* /opt/cola/permits/1157317048_1619537047.34/0/re2j-1-2-sources-1-jar/com/google/re2j/Prog.java
```

```
* /opt/cola/permits/1157317048_1619537047.34/0/re2j-1-2-sources-1-jar/com/google/re2j/CharClass.java
```

```
* /opt/cola/permits/1157317048_1619537047.34/0/re2j-1-2-sources-1-jar/com/google/re2j/RE2.java
```

```
* /opt/cola/permits/1157317048_1619537047.34/0/re2j-1-2-sources-1-jar/com/google/re2j/Compiler.java
```

```
* /opt/cola/permits/1157317048_1619537047.34/0/re2j-1-2-sources-1-
```

```
jar/com/google/re2j/PatternSyntaxException.java
```

```
* /opt/cola/permits/1157317048_1619537047.34/0/re2j-1-2-sources-1-jar/com/google/re2j/MachineInput.java
```

```
* /opt/cola/permits/1157317048_1619537047.34/0/re2j-1-2-sources-1-jar/com/google/re2j/Unicode.java
```

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Found in path(s):

```
* /opt/cola/permits/1638411436_1681425252.2254884/0/grpc-stub-1-24-0-sources-1-
jar/io/grpc/stub/annotations/RpcMethod.java
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```

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```
* /opt/cola/permits/1638411436_1681425252.2254884/0/grpc-stub-1-24-0-sources-1-jar/io/grpc/stub/package-
info.java
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Found in path(s):

- \* /opt/cola/permits/1638411436\_1681425252.2254884/0/grpc-stub-1-24-0-sources-1-jar/io/grpc/stub/MetadataUtils.java
- \* /opt/cola/permits/1638411436\_1681425252.2254884/0/grpc-stub-1-24-0-sources-1-jar/io/grpc/stub/ClientCalls.java
- \* /opt/cola/permits/1638411436\_1681425252.2254884/0/grpc-stub-1-24-0-sources-1-jar/io/grpc/stub/ServerCalls.java
- \* /opt/cola/permits/1638411436\_1681425252.2254884/0/grpc-stub-1-24-0-sources-1-jar/io/grpc/stub/AbstractStub.java
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- \* /opt/cola/permits/1638411436\_1681425252.2254884/0/grpc-stub-1-24-0-sources-1-jar/io/grpc/stub/ClientCallStreamObserver.java
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## 1.89 asm 9.2

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Eclipse

The following artifacts are EPL.

- \* org.eclipse.jetty.orbit:org.eclipse.jdt.core

The following artifacts are EPL and ASL2.

- \* org.eclipse.jetty.orbit:javax.security.auth.message

The following artifacts are EPL and CDDL 1.0.

- \* org.eclipse.jetty.orbit:javax.mail.glassfish

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Oracle

The following artifacts are CDDL + GPLv2 with classpath exception.

<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

- \* javax.servlet:javax.servlet-api
- \* javax.annotation:javax.annotation-api
- \* javax.transaction:javax.transaction-api
- \* javax.websocket:javax.websocket-api

-----

Oracle OpenJDK

If ALPN is used to negotiate HTTP/2 connections, then the following artifacts may be included in the distribution or downloaded when ALPN module is selected.

- \* java.sun.security.ssl

These artifacts replace/modify OpenJDK classes. The modifications are hosted at github and both modified and original are under GPL v2 with classpath exceptions.

<http://openjdk.java.net/legal/gplv2+ce.html>

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OW2

The following artifacts are licensed by the OW2 Foundation according to the terms of <http://asm.ow2.org/license.html>

org.ow2.asm:asm-commons

org.ow2.asm:asm

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Apache

The following artifacts are ASL2 licensed.

org.apache.taglibs:taglibs-standard-spec

org.apache.taglibs:taglibs-standard-impl

-----

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The following artifacts are ASL2 licensed. Based on selected classes from following Apache Tomcat jars, all ASL2 licensed.

org.mortbay.jasper:apache-jsp

org.apache.tomcat:tomcat-jasper

org.apache.tomcat:tomcat-juli

org.apache.tomcat:tomcat-jsp-api

org.apache.tomcat:tomcat-el-api

org.apache.tomcat:tomcat-jasper-el

org.apache.tomcat:tomcat-api

org.apache.tomcat:tomcat-util-scan

org.apache.tomcat:tomcat-util

org.mortbay.jasper:apache-el

org.apache.tomcat:tomcat-jasper-el

org.apache.tomcat:tomcat-el-api

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Mortbay

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<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

org.eclipse.jetty.toolchain:jetty-schemas

-----

Assorted

The UnixCrypt.java code implements the one way cryptography used by Unix systems for simple password protection. Copyright 1996 Aki Yoshida, modified April 2001 by Iris Van den Broeke, Daniel Deville.

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### 4.1.93.Final

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```
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jar/io/netty/channel/kqueue/KQueueRecvByteAllocatorHandle.java
* /opt/cola/permits/1698848143_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-
jar/io/netty/channel/kqueue/AbstractKQueueStreamChannel.java
* /opt/cola/permits/1698848143_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-
jar/io/netty/channel/kqueue/KQueue.java
* /opt/cola/permits/1698848143_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-
jar/io/netty/channel/kqueue/KQueueSocketChannel.java
* /opt/cola/permits/1698848143_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-
jar/io/netty/channel/kqueue/KQueueEventLoopGroup.java
* /opt/cola/permits/1698848143_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-
jar/io/netty/channel/kqueue/KQueueStaticallyReferencedJniMethods.java
* /opt/cola/permits/1698848143_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-
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jar/io/netty/channel/kqueue/KQueueEventLoop.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/KQueueChannelConfig.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/KQueueDomainSocketChannelConfig.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/KQueueDatagramChannelConfig.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/KQueueEventArray.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/KQueueDatagramChannel.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/AcceptFilter.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/KQueueChannelOption.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/KQueueServerDomainSocketChannel.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/AbstractKQueueServerChannel.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/AbstractKQueueChannel.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/KQueueServerSocketChannel.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/KQueueSocketChannelConfig.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/Native.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/package-info.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/BsdSocket.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/NativeLongArray.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/KQueueServerSocketChannelConfig.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
jar/io/netty/channel/kqueue/KQueueServerChannelConfig.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-  
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\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-jar/io/netty/channel/kqueue/KQueueDomainDatagramChannelConfig.java  
\* /opt/cola/permits/1698848143\_1685285738.842649/0/netty-transport-classes-kqueue-4-1-93-final-sources-jar/io/netty/channel/kqueue/KQueueDomainDatagramChannel.java  
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## 1.93 jackson-datatype-jdk8 2.15.0

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## 1.94 quartz 2.3.2

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\* Fixed minor IBM xLC compiler build issues  
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Licensing Information User Manual

MySQL 8.0

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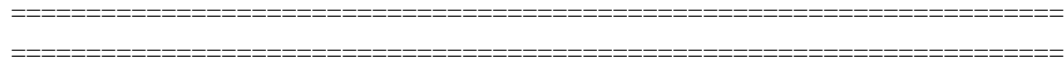
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cURL (libcurl)

cURL (libcurl)

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*/
```

The following files

```
./lib
  saslint.h auxprop.c canonusr.c checkpw.c client.c common.c config.c
  external.c saslutil.c server.c seterror.c dlopen.c
./plugins
  scram.c gssapi.c
./common
  plugin_common.c
```

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```
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```
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*/
```

```
/* Function names changed to avoid namespace collisions: Rob Siemborski */
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dtoa.c

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Facebook Fast Checksum Patch

Facebook Fast Checksum Patch

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Google SMP patch

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Kerberos5

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lib/gssapi/mechglue/g\_acquire\_cred.c  
lib/gssapi/mechglue/g\_canon\_name.c  
lib/gssapi/mechglue/g\_compare\_name.c  
lib/gssapi/mechglue/g\_context\_time.c  
lib/gssapi/mechglue/g\_delete\_sec\_context.c  
lib/gssapi/mechglue/g\_dsp\_name.c  
lib/gssapi/mechglue/g\_dsp\_status.c  
lib/gssapi/mechglue/g\_dup\_name.c  
lib/gssapi/mechglue/g\_exp\_sec\_context.c  
lib/gssapi/mechglue/g\_export\_name.c  
lib/gssapi/mechglue/g\_glue.c  
lib/gssapi/mechglue/g\_imp\_name.c  
lib/gssapi/mechglue/g\_imp\_sec\_context.c  
lib/gssapi/mechglue/g\_init\_sec\_context.c  
lib/gssapi/mechglue/g\_initialize.c  
lib/gssapi/mechglue/g\_inquire\_context.c  
lib/gssapi/mechglue/g\_inquire\_cred.c  
lib/gssapi/mechglue/g\_inquire\_names.c  
lib/gssapi/mechglue/g\_process\_context.c  
lib/gssapi/mechglue/g\_rel\_buffer.c  
lib/gssapi/mechglue/g\_rel\_cred.c  
lib/gssapi/mechglue/g\_rel\_name.c  
lib/gssapi/mechglue/g\_rel\_oid\_set.c  
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lib/gssapi/mechglue/g\_sign.c  
lib/gssapi/mechglue/g\_store\_cred.c  
lib/gssapi/mechglue/g\_unseal.c  
lib/gssapi/mechglue/g\_userok.c  
lib/gssapi/mechglue/g\_utils.c  
lib/gssapi/mechglue/g\_verify.c  
lib/gssapi/mechglue/gssd\_pname\_to\_uid.c  
lib/gssapi/mechglue/mglueP.h

lib/gssapi/mechglue/oid\_ops.c  
lib/gssapi/spnego/gssapiP\_spnego.h  
lib/gssapi/spnego/spnego\_mech.c

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include/iprof\_hdr.h  
kadmin/server/iprofd\_svc.c  
lib/kdb/iprof.x  
lib/kdb/kdb\_convert.c  
lib/kdb/kdb\_log.c  
lib/kdb/kdb\_log.h  
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Also see the ChangeLog for even more people who have helped over the years by submitting fixes, patches and reporting bugs.

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MySQL Router 8.0

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Kerberos5

Kerberos5

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The implementations of GSSAPI mechglue in GSSAPI-SPNEGO in "src/lib/gssapi", including the following files:

lib/gssapi/generic/gssapi\_err\_generic.et  
lib/gssapi/mechglue/g\_accept\_sec\_context.c  
lib/gssapi/mechglue/g\_acquire\_cred.c  
lib/gssapi/mechglue/g\_canon\_name.c  
lib/gssapi/mechglue/g\_compare\_name.c  
lib/gssapi/mechglue/g\_context\_time.c  
lib/gssapi/mechglue/g\_delete\_sec\_context.c  
lib/gssapi/mechglue/g\_dsp\_name.c  
lib/gssapi/mechglue/g\_dsp\_status.c  
lib/gssapi/mechglue/g\_dup\_name.c  
lib/gssapi/mechglue/g\_exp\_sec\_context.c  
lib/gssapi/mechglue/g\_export\_name.c  
lib/gssapi/mechglue/g\_glue.c  
lib/gssapi/mechglue/g\_imp\_name.c  
lib/gssapi/mechglue/g\_imp\_sec\_context.c  
lib/gssapi/mechglue/g\_init\_sec\_context.c  
lib/gssapi/mechglue/g\_initialize.c  
lib/gssapi/mechglue/g\_inquire\_context.c



lib/gssapi/mechglue/g\_inquire\_cred.c  
lib/gssapi/mechglue/g\_inquire\_names.c  
lib/gssapi/mechglue/g\_process\_context.c  
lib/gssapi/mechglue/g\_rel\_buffer.c  
lib/gssapi/mechglue/g\_rel\_cred.c  
lib/gssapi/mechglue/g\_rel\_name.c  
lib/gssapi/mechglue/g\_rel\_oid\_set.c  
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lib/gssapi/mechglue/g\_unseal.c  
lib/gssapi/mechglue/g\_userok.c  
lib/gssapi/mechglue/g\_utils.c  
lib/gssapi/mechglue/g\_verify.c  
lib/gssapi/mechglue/gssd\_pname\_to\_uid.c  
lib/gssapi/mechglue/mglueP.h  
lib/gssapi/mechglue/oid\_ops.c  
lib/gssapi/spnego/gssapiP\_spnego.h  
lib/gssapi/spnego/spnego\_mech.c

and the initial implementation of incremental propagation, including the following new or changed files:

include/iprop\_hdr.h  
kadmin/server/ipropd\_svc.c  
lib/kdb/iprop.x  
lib/kdb/kdb\_convert.c  
lib/kdb/kdb\_log.c  
lib/kdb/kdb\_log.h  
lib/krb5/error\_tables/kdb5\_err.et  
slave/kpropd\_rpc.c  
slave/kproplog.c

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## 1.96 groovy-macro 3.0.9

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## 1.97 hystrix-core 1.5.12

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## 1.99 netty-handler-ssl-ocsp 4.1.93.Final

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* /opt/cola/permits/1698848023_1685285715.8732626/0/netty-handler-ssl-ocsp-4-1-93-final-sources-
jar/io/netty/handler/ssl/ocsp/OcspValidationEvent.java
* /opt/cola/permits/1698848023_1685285715.8732626/0/netty-handler-ssl-ocsp-4-1-93-final-sources-
jar/io/netty/handler/ssl/ocsp/IOTransport.java
* /opt/cola/permits/1698848023_1685285715.8732626/0/netty-handler-ssl-ocsp-4-1-93-final-sources-
jar/io/netty/handler/ssl/ocsp/OcspClient.java
* /opt/cola/permits/1698848023_1685285715.8732626/0/netty-handler-ssl-ocsp-4-1-93-final-sources-
jar/io/netty/handler/ssl/ocsp/OcspServerCertificateValidator.java
* /opt/cola/permits/1698848023_1685285715.8732626/0/netty-handler-ssl-ocsp-4-1-93-final-sources-
jar/io/netty/handler/ssl/ocsp/OcspHttpHandler.java
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- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/Value.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/Dates.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/groovy/json/JsonDelegate.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/FastStringService.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/CharScanner.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/groovy/json/StringEscapeUtils.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/Type.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/ValueContainer.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/DefaultFastStringServiceFactory.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/groovy/json/StreamingJsonBuilder.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/JsonParserCharArray.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/LazyMap.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/ByteScanner.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/ValueList.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/DefaultFastStringService.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/ValueMapImpl.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/JsonFastParser.java
- \* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-

jar/org/apache/groovy/json/internal/Exceptions.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/groovy/json/JsonParserType.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/JsonParserLax.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/ValueMap.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/CharBuf.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/groovy/json/JsonToken.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/Cache.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/Sys.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/groovy/json/JsonSlurper.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/JsonStringDecoder.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/groovy/json/JsonOutput.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/groovy/json/JsonParser.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/groovy/json/JsonTokenType.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/groovy/json/JsonException.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/groovy/json/JsonLexer.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/MapItemValue.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/groovy/json/JsonSlurperClassic.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/CharSequenceValue.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/ReaderCharacterSource.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/JsonParserUsingCharacterSource.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/IO.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/SimpleCache.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/FastStringServiceFactory.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/Chr.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/CacheType.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/BaseJsonParser.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/FastStringUtils.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/ArrayUtils.java  
\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/groovy/json/JsonGenerator.java



```
* /opt/cola/permits/1223665998_1635937393.33/0/groovy-json-3-0-9-sources-
jar/org/apache/groovy/json/internal/NumberValue.java
* /opt/cola/permits/1223665998_1635937393.33/0/groovy-json-3-0-9-sources-
jar/groovy/json/DefaultJsonGenerator.java
* /opt/cola/permits/1223665998_1635937393.33/0/groovy-json-3-0-9-sources-
jar/org/apache/groovy/json/internal/LazyValueMap.java
```

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## 1.106 antlr 4.6

### 1.106.1 Available under license :

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 */

/** How to generate rules derived from left-recursive rules.
```



```

* These rely on recRuleAltPredicate(),
* recRuleArg(), recRuleSetResultAction(), recRuleSetReturnAction()
* templates in main language.stg
*/
group LeftRecursiveRules;

```

```

recRule(ruleName, argName, primaryAlts, opAlts, setResultAction,
        userRetvals, leftRecursiveRuleRefLabels) ::=
<<
<ruleName><if(userRetvals)> returns [<userRetvals>]<endif>
: ( { } <primaryAlts:{ alt | <alt.altText> }; separator="\n    | ">
  )
  (
    <opAlts; separator="\n    | ">
  )*
;
>>

```

```

recRuleAlt(alt, precOption, opPrec, pred) ::= <<
{<pred>}?<<precOption>=<opPrec>> <alt.altText>
>>

```

Found in path(s):

```

* /opt/cola/permits/1166873170_1621514800.65/0/antlr4-4-6-sources-1-
jar/org/antlr/v4/tool/templates/LeftRecursiveRules.stg

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```

/*

```

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\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/parse/ANTLRLexer.java

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\*/

/\*

This file contains the actual layout of the messages emitted by ANTLR.

The text itself is coming out of the languages/\*stg files, according to the chosen locale.

This file contains the default format ANTLR uses.

\*/

```
location(file, line, column) ::= "<file>(<line>,<column>)"
```

```
message(id, text) ::= "error <id> : <text>"
```

```
report(location, message, type) ::= "<location> : <type> <message.id> : <message.text>"
```

```
wantsSingleLineMessage() ::= "true"
```

Found in path(s):

```
* /opt/cola/permits/1166873170_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/templates/messages/formats/vs2005.stg
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- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/ErrorType.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/gui/PostScriptDocument.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/semantics/SemanticPipeline.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/GrammarParserInterpreter.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/gui/SystemFontMetrics.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/ListenerDispatchMethod.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/chunk/TokenPropertyRef\_int.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/automata/LexerATNFactory.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/chunk/TokenPropertyRef\_text.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/LL1Loop.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/chunk/QRetValueRef.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/chunk/ActionTemplate.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/RuleActionFunction.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/Choice.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/Alternative.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/OptionalBlock.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/target/Python2Target.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/ast/GrammarASTWithOptions.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/LexerFile.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/BaseVisitorFile.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/RuleElement.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/chunk/ThisRulePropertyRef\_text.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/chunk/RetValueRef.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/ArgAction.java
- \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-

jar/org/antlr/v4/codegen/target/JavaScriptTarget.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/tool/ast/RuleElementAST.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
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 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
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 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/automata/TailEpsilonRemover.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/model/chunk/LocalRef.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/ast/PredAST.java  
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 jar/org/antlr/v4/tool/LeftRecursionCyclesMessage.java

\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/decl/ContextTokenListIndexedGetterDecl.java  
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\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/VisitorFile.java  
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\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
jar/org/antlr/v4/codegen/OutputModelWalker.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
jar/org/antlr/v4/tool/BuildDependencyGenerator.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
jar/org/antlr/v4/semantics/AttributeChecks.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
jar/org/antlr/v4/semantics/ActionSniffer.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
jar/org/antlr/v4/codegen/model/ThrowRecognitionException.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/misc/CharSupport.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
jar/org/antlr/v4/codegen/model/chunk/TokenPropertyRef\_channel.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
jar/org/antlr/v4/codegen/model/chunk/TokenRef.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/ast/PlusBlockAST.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
jar/org/antlr/v4/codegen/model/chunk/ActionChunk.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
jar/org/antlr/v4/parse/ActionSplitterListener.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
jar/org/antlr/v4/gui/JFileChooserConfirmOverwrite.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/Parser.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/misc/OrderedHashMap.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/ErrorMessageManager.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/automata/ATNPrinter.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
jar/org/antlr/v4/codegen/OutputModelFactory.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
jar/org/antlr/v4/analysis/LeftRecursionDetector.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
jar/org/antlr/v4/codegen/model/chunk/TokenPropertyRef\_pos.java  
\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/misc/Utils.java

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```

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 */

```

```

tree grammar BlockSetTransformer;
options {
language    = Java;
tokenVocab = ANTLRParser;
ASTLabelType = GrammarAST;
output     = AST;
filter    = true;
}

```

```

@header {
package org.antlr.v4.parse;
import org.antlr.v4.misc.Utils;
import org.antlr.v4.misc.*;
import org.antlr.v4.tool.*;
import org.antlr.v4.tool.ast.*;
import java.util.List;
import java.util.Set;
import java.util.HashSet;

```

```

import java.util.ArrayList;
import org.antlr.v4.runtime.misc.IntervalSet;
}

@members {
public String currentRuleName;
public GrammarAST currentAlt;
public Grammar g;
public BlockSetTransformer(TreeNodeStream input, Grammar g) {
    this(input, new RecognizerSharedState());
    this.g = g;
}
}

topdown
: ^(RULE (id=TOKEN_REF|id=RULE_REF) {currentRuleName=$id.text;} .+)
| setAlt
| ebnfBlockSet
| blockSet
;

setAlt
: {inContext("RULE BLOCK")}?
  ALT {currentAlt = $start;}
;

// (BLOCK (ALT (+ (BLOCK (ALT INT) (ALT ID))))))
ebnfBlockSet
@after {
  GrammarTransformPipeline.setGrammarPtr(g, $tree);
}
: ^(ebnfSuffix blockSet) -> ^(ebnfSuffix ^(BLOCK<BlockAST> ^(ALT<AltAST> blockSet)))
;

ebnfSuffix
@after {$tree = (GrammarAST)adaptor.dupNode($start);}
: OPTIONAL
| CLOSURE
| POSITIVE_CLOSURE
;

blockSet
@init {
  boolean inLexer = Grammar.isTokenName(currentRuleName);
}
@after {
  GrammarTransformPipeline.setGrammarPtr(g, $tree);
}

```

```

: {inContext("RULE")}? // top-level: rule block and > 1 alt
^(BLOCK ^(alt=ALT elementOptions? {((AltAST)$alt).altLabel==null}? setElement[inLexer]) ( ^(ALT
elementOptions? setElement[inLexer]) )+)
-> ^(BLOCK<BlockAST>[$BLOCK.token] ^(ALT<AltAST>[$BLOCK.token,"ALT"] ^(SET[$BLOCK.token,
"SET"] setElement+)))
| {!inContext("RULE")}? // if not rule block and > 1 alt
^(BLOCK ^(ALT elementOptions? setElement[inLexer]) ( ^(ALT elementOptions? setElement[inLexer]) )+)
-> ^(SET[$BLOCK.token, "SET"] setElement+)
;

```

```

setElement[boolean inLexer]

```

```

@after {

```

```

GrammarTransformPipeline.setGrammarPtr(g, $tree);

```

```

}

```

```

: ( ^(a=STRING_LITERAL elementOptions) {!inLexer ||

```

```

CharSupport.getCharValueFromGrammarCharLiteral($a.getText())!=-1 }?

```

```

| a=STRING_LITERAL {!inLexer || CharSupport.getCharValueFromGrammarCharLiteral($a.getText())!=-1 }?

```

```

| {!inLexer}?=> ^(TOKEN_REF elementOptions)

```

```

| {!inLexer}?=> TOKEN_REF

```

```

| {inLexer}?=> ^(RANGE a=STRING_LITERAL b=STRING_LITERAL)

```

```

{CharSupport.getCharValueFromGrammarCharLiteral($a.getText())!=-1 &&

```

```

CharSupport.getCharValueFromGrammarCharLiteral($b.getText())!=-1 }?

```

```

)

```

```

;

```

```

elementOptions

```

```

: ^(ELEMENT_OPTIONS elementOption*)

```

```

;

```

```

elementOption

```

```

: ID

```

```

| ^(ASSIGN id=ID v=ID)

```

```

| ^(ASSIGN ID v=STRING_LITERAL)

```

```

| ^(ASSIGN ID v=ACTION)

```

```

| ^(ASSIGN ID v=INT)

```

```

;

```

```

Found in path(s):

```

```

* /opt/cola/permits/1166873170_1621514800.65/0/antlr4-4-6-sources-1-
jar/org/antlr/v4/parse/BlockSetTransformer.g

```

```

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```

```

/*

```

```

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```

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```

```

*

```

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- \*/

// args must be <object-model-object>, <fields-resulting-in-STs>

```

ParserFile(file, parser, namedActions, contextSuperClass) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
namespace <file.genPackage> {
<endif>
<namedActions.header>
using System;
using System.Text;
using System.Diagnostics;
using System.Collections.Generic;
using Antlr4.Runtime;
using Antlr4.Runtime.Atn;
using Antlr4.Runtime.Misc;
using Antlr4.Runtime.Tree;
using DFA = Antlr4.Runtime.Dfa.DFA;

<parser>
<if(file.genPackage)>
} // namespace <file.genPackage>
<endif>
>>

```

```

ListenerFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
namespace <file.genPackage> {
<endif>
<header>
using Antlr4.Runtime.Misc;
using IParseTreeListener = Antlr4.Runtime.Tree.IParseTreeListener;
using IToken = Antlr4.Runtime.IToken;

/// \<summary>
/// This interface defines a complete listener for a parse tree produced by
/// \<see cref="<csIdentifier.(file.parserName)>"/>.
/// \</summary>
[System.CodeDom.Compiler.GeneratedCode("ANTLR", "<file.ANTLRVersion>")]
[System.CLSCompliant(false)]
public interface I<file.grammarName>Listener : IParseTreeListener {
    <file.listenerNames:{lname |
/// \<summary>
<if(file.listenerLabelRuleNames.(lname))>
/// Enter a parse tree produced by the \<c><lname>\</c>
/// labeled alternative in \<see cref="<file.parserName>.<file.listenerLabelRuleNames.(lname)>"/>.
<else>
/// Enter a parse tree produced by \<see cref="<file.parserName>.<lname>"/>.
<endif>
/// \</summary>
/// \<param name="context">The parse tree.\</param>
void Enter<lname; format="cap">([NotNull] <csIdentifier.(file.parserName)>.<lname; format="cap">Context
context);
/// \<summary>
<if(file.listenerLabelRuleNames.(lname))>
/// Exit a parse tree produced by the \<c><lname>\</c>
/// labeled alternative in \<see cref="<file.parserName>.<file.listenerLabelRuleNames.(lname)>"/>.
<else>
/// Exit a parse tree produced by \<see cref="<file.parserName>.<lname>"/>.
<endif>
/// \</summary>
/// \<param name="context">The parse tree.\</param>
void Exit<lname; format="cap">([NotNull] <csIdentifier.(file.parserName)>.<lname; format="cap">Context
context);}; separator="\n"
    }
<if(file.genPackage)>
} // namespace <file.genPackage>
<endif>
>>

```

```

BaseListenerFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>

```



```

<if(file.genPackage)>
namespace <file.genPackage> {
<endif>
<header>

using Antlr4.Runtime.Misc;
using IErrorNode = Antlr4.Runtime.Tree.IErrorNode;
using ITerminalNode = Antlr4.Runtime.Tree.ITerminalNode;
using IToken = Antlr4.Runtime.IToken;
using ParserRuleContext = Antlr4.Runtime.ParserRuleContext;

/// \<summary>
/// This class provides an empty implementation of \<see cref="I<file.grammarName>Listener"/>,
/// which can be extended to create a listener which only needs to handle a subset
/// of the available methods.
/// \</summary>
[System.CodeDom.Compiler.GeneratedCode("ANTLR", "<file.ANTLRVersion>")]
[System.CLSCompliant(false)]
public partial class <file.grammarName>BaseListener : I<file.grammarName>Listener {
    <file.listenerNames:{Iname |
    /// \<summary>
    <if(file.listenerLabelRuleNames.(Iname))>
    /// Enter a parse tree produced by the \<c><Iname>\</c>
    /// labeled alternative in \<see cref="<file.parserName>.<file.listenerLabelRuleNames.(Iname)>"/>.
    <else>
    /// Enter a parse tree produced by \<see cref="<file.parserName>.<Iname>"/>.
    <endif>
    /// \<para>The default implementation does nothing.\</para>
    /// \</summary>
    /// \<param name="context">The parse tree.\</param>
    public virtual void Enter<Iname; format="cap">([NotNull] <csIdentifier.(file.parserName)>.<Iname;
    format="cap">Context context) { \}
    /// \<summary>
    <if(file.listenerLabelRuleNames.(Iname))>
    /// Exit a parse tree produced by the \<c><Iname>\</c>
    /// labeled alternative in \<see cref="<file.parserName>.<file.listenerLabelRuleNames.(Iname)>"/>.
    <else>
    /// Exit a parse tree produced by \<see cref="<file.parserName>.<Iname>"/>.
    <endif>
    /// \<para>The default implementation does nothing.\</para>
    /// \</summary>
    /// \<param name="context">The parse tree.\</param>
    public virtual void Exit<Iname; format="cap">([NotNull] <csIdentifier.(file.parserName)>.<Iname;
    format="cap">Context context) { \} }; separator="\n"

    /// \<inheritdoc>
    /// \<remarks>The default implementation does nothing.\</remarks>
    public virtual void EnterEveryRule([NotNull] ParserRuleContext context) { \}

```

```

/// \<inheritdoc/>
/// \<remarks>The default implementation does nothing.\</remarks>
public virtual void ExitEveryRule([NotNull] ParserRuleContext context) { }
/// \<inheritdoc/>
/// \<remarks>The default implementation does nothing.\</remarks>
public virtual void VisitTerminal([NotNull] ITerminalNode node) { }
/// \<inheritdoc/>
/// \<remarks>The default implementation does nothing.\</remarks>
public virtual void VisitErrorNode([NotNull] IErrorNode node) { }
}
<if(file.genPackage)>
} // namespace <file.genPackage>
<endif>
>>

```

```

VisitorFile(file, header, namedActions) ::= <<

```

```

<fileHeader(file.grammarFileName, file.ANTLRVersion)>

```

```

<if(file.genPackage)>

```

```

namespace <file.genPackage> {

```

```

<endif>

```

```

<header>

```

```

using Antlr4.Runtime.Misc;

```

```

using Antlr4.Runtime.Tree;

```

```

using IToken = Antlr4.Runtime.IToken;

```

```

/// \<summary>

```

```

/// This interface defines a complete generic visitor for a parse tree produced

```

```

/// by \<see cref="<csIdentifier.(file.parserName)>">/>.

```

```

/// \</summary>

```

```

/// \<typeparam name="Result">The return type of the visit operation.\</typeparam>

```

```

[System.CodeDom.Compiler.GeneratedCode("ANTLR", "<file.ANTLRVersion>")]

```

```

[System.CLSCompliant(false)]

```

```

public interface I<file.grammarName>Visitor<Result> : IParseTreeVisitor<Result> {

```

```

    <file.visitorNames> { Iname |

```

```

    /// \<summary>

```

```

    <if(file.visitorLabelRuleNames.(Iname))>

```

```

    /// Visit a parse tree produced by the \<c><Iname>\</c>

```

```

    /// labeled alternative in \<see cref="<file.parserName>.<file.visitorLabelRuleNames.(Iname)>">/>.

```

```

    <else>

```

```

    /// Visit a parse tree produced by \<see cref="<file.parserName>.<Iname>">/>.

```

```

    <endif>

```

```

    /// \</summary>

```

```

    /// \<param name="context">The parse tree.\</param>

```

```

    /// \<return>The visitor result.\</return>

```

```

    Result Visit<Iname; format="cap">([NotNull] <csIdentifier.(file.parserName)>.<Iname; format="cap">Context
    context);}; separator="\n">

```

```

    }

```

```

    <if(file.genPackage)>

```

```

} // namespace <file.genPackage>
<endif>
>>

BaseVisitorFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
namespace <file.genPackage> {
<endif>
<header>
using Antlr4.Runtime.Misc;
using Antlr4.Runtime.Tree;
using IToken = Antlr4.Runtime.IToken;
using ParserRuleContext = Antlr4.Runtime.ParserRuleContext;

/// \<summary>
/// This class provides an empty implementation of \<see cref="I<file.grammarName>Visitor{Result}" />,
/// which can be extended to create a visitor which only needs to handle a subset
/// of the available methods.
/// \</summary>
/// \<typeparam name="Result">The return type of the visit operation.\</typeparam>
[System.CodeDom.Compiler.GeneratedCode("ANTLR", "<file.ANTLRVersion>")]
[System.CLSCompliant(false)]
public partial class <file.grammarName>BaseVisitor<Result> : AbstractParseTreeVisitor<Result>,
I<file.grammarName>Visitor<Result> {
    <file.visitorNames>: { Iname |
    /// \<summary>
    <if(file.visitorLabelRuleNames.(Iname))>
    /// Visit a parse tree produced by the \<c><Iname>\</c>
    /// labeled alternative in \<see cref="<file.parserName>.<file.visitorLabelRuleNames.(Iname)>" />.
    <else>
    /// Visit a parse tree produced by \<see cref="<file.parserName>.<Iname>" />.
    <endif>
    /// \<para>
    /// The default implementation returns the result of calling \<see
    cref="AbstractParseTreeVisitor{Result}.VisitChildren(IRuleNode)" />
    /// on \<paramref name="context" />.
    /// \</para>
    /// \</summary>
    /// \<param name="context">The parse tree.\</param>
    /// \<return>The visitor result.\</return>
    public virtual Result Visit<Iname; format="cap">([NotNull] <csIdentifier.(file.parserName)>.<Iname;
    format="cap">Context context) { return VisitChildren(context); \}; separator="\n">
    }
    <if(file.genPackage)>
    } // namespace <file.genPackage>
<endif>
>>

```

```

fileHeader(grammarFileName, ANTLRVersion) ::= <<
//-----
//\<auto-generated>
// This code was generated by a tool.
// ANTLR Version: <ANTLRVersion>
//
// Changes to this file may cause incorrect behavior and will be lost if
// the code is regenerated.
//\</auto-generated>
//-----

// Generated from <grammarFileName> by ANTLR <ANTLRVersion>

// Unreachable code detected
#pragma warning disable 0162
// The variable '...' is assigned but its value is never used
#pragma warning disable 0219
// Missing XML comment for publicly visible type or member '...'
#pragma warning disable 1591
// Ambiguous reference in cref attribute
#pragma warning disable 419

>>

Parser(parser, funcs, atn, sempredFuncs, superClass) ::= <<
<Parser_(ctor="parser_ctor", ...)>
>>

Parser_(parser, funcs, atn, sempredFuncs, ctor, superClass) ::= <<
[System.CodeDom.Compiler.GeneratedCode("ANTLR", "<file.ANTLRVersion>")]
[System.CLSCompliant(false)]
public partial class <csIdentifier.(parser.name)> : <superClass; null="Parser"> {
protected static DFA[] decisionToDFA;
protected static PredictionContextCache sharedContextCache = new PredictionContextCache();
<if(parser.tokens)>
public const int
<parser.tokens:{k | <k>=<parser.tokens.(k)>}; separator=", ", wrap, anchor>;
<endif>
public const int
<parser.rules:{r | RULE_<r.name> = <r.index>}; separator=", ", wrap, anchor>;
public static readonly string[] ruleNames = {
<parser.ruleNames:{r | "<r>"}; separator=", ", wrap, anchor>
};

<vocabulary(parser.literalNames, parser.symbolicNames)>

public override string GrammarFileName { get { return "<parser.grammarFileName>"; } }

```

```

public override string[] RuleNames { get { return ruleNames; } }

public override string SerializedAtn { get { return _serializedATN; } }

static <csIdentifier.(parser.name)>() {
    decisionToDFA = new DFA[_ATN.NumberOfDecisions];
    for (int i = 0; i < _ATN.NumberOfDecisions; i++) {
        decisionToDFA[i] = new DFA(_ATN.GetDecisionState(i), i);
    }
}

<namedActions.members>
<parser:(ctor)()>
<funcs; separator="\n">

<if(sempredFuncs)>
public override bool Sempred(RuleContext _localctx, int ruleIndex, int predIndex) {
    switch (ruleIndex) {
        <parser.sempredFuncs.values:{f}
case <f.ruleIndex>: return <f.name>_sempred((<f.ctxType>)_localctx, predIndex);}; separator="\n">
    }
    return true;
}
<sempredFuncs.values; separator="\n">
<endif>

<atn>
}
>>

vocabulary(literalNames, symbolicNames) ::= <<
private static readonly string[] _LiteralNames = {
    <literalNames:{t | <t>}; null="null", separator=", ", wrap, anchor>
};
private static readonly string[] _SymbolicNames = {
    <symbolicNames:{t | <t>}; null="null", separator=", ", wrap, anchor>
};
public static readonly IVocabulary DefaultVocabulary = new Vocabulary(_LiteralNames, _SymbolicNames);

[NotNull]
public override IVocabulary Vocabulary
{
    get
    {
        return DefaultVocabulary;
    }
}
}

```

>>

```
dumpActions(recog, argFuncs, actionFuncs, sempredFuncs) ::= <<
<if(actionFuncs)>
public override void Action(RuleContext _localctx, int ruleIndex, int actionIndex) {
    switch (ruleIndex) {
        <recog.actionFuncs.values: {f|
case <f.ruleIndex> : <f.name>_action(<if(!recog.modes)><f.ctxType><endif>_localctx, actionIndex); break;};
separator="\n">
        }
    }
    <actionFuncs.values; separator="\n">
<endif>
<if(sempredFuncs)>
public override bool Sempred(RuleContext _localctx, int ruleIndex, int predIndex) {
    switch (ruleIndex) {
        <recog.sempredFuncs.values: {f|
case <f.ruleIndex> : return <f.name>_sempred(<if(!recog.modes)><f.ctxType><endif>_localctx, predIndex);};
separator="\n">
        }
        return true;
    }
    <sempredFuncs.values; separator="\n">
<endif>
>>
```

```
parser_ctor(parser) ::= <<
public <csIdentifier.(parser.name)>(ITokenStream input)
: base(input)
{
    Interpreter = new ParserATNSimulator(this, _ATN, decisionToDFA, sharedContextCache);
}
>>
```

/\* This generates a private method since the actionIndex is generated, making an  
\* overriding implementation impossible to maintain.

\*/

```
RuleActionFunction(r, actions) ::= <<
private void <r.name>_action(<r.ctxType> _localctx, int actionIndex) {
    switch (actionIndex) {
        <actions: {index|
case <index>: <actions.(index)> break;}; separator="\n">
        }
    }
>>
```

/\* This generates a private method since the predIndex is generated, making an  
\* overriding implementation impossible to maintain.

```

*/
RuleSempredFunction(r, actions) ::= <<
private bool <r.name>_sempred(<r.ctxType> _localctx, int predIndex) {
    switch (predIndex) {
        <actions: {index|
case <index>: return <actions.(index)>;}; separator="\n">
        }
    return true;
}
>>

RuleFunction(currentRule,args,code,locals,ruleCtx,altLabelCtxs,namedActions,finallyAction,postamble,exceptions)
::= <<

<if(ruleCtx)>
<ruleCtx>
<endif>
<altLabelCtxs: {l | <altLabelCtxs.(l)>}; separator="\n">

[RuleVersion(<namedActions.version; null="0">)]
<if(currentRule.modifiers)><currentRule.modifiers: {f | <f> }><else>public <endif><currentRule.ctxType>
<csIdentifier.(currentRule.name)>(<args; separator=", ">) {
    <currentRule.ctxType> _localctx = new <currentRule.ctxType>(Context, State<currentRule.args: {a | ,
<csIdentifier.(a.name)>}>);
    EnterRule(_localctx, <currentRule.startState>, RULE_<currentRule.name>);
    <namedActions.init>
    <locals; separator="\n">
    try {
    <if(currentRule.hasLookaheadBlock)>
        int _alt;
    <endif>
        <code>
        <postamble; separator="\n">
        <namedActions.after>
    }
    <if(exceptions)>
    <exceptions; separator="\n">
    <else>
    catch (RecognitionException re) {
        _localctx.exception = re;
        ErrorHandler.ReportError(this, re);
        ErrorHandler.Recover(this, re);
    }
    <endif>
    finally {
        <finallyAction>
        ExitRule();
    }
}

```

```

return _localctx;
}
>>

```

```

LeftFactoredRuleFunction(currentRule,args,code,locals,namedActions,finallyAction,postamble) ::=
<<

```

```

<if(currentRule.modifiers)><currentRule.modifiers:{f | <f> }><else>private <endif><currentRule.ctxType>
<csIdentifier(currentRule.name)><(args; separator=", "> {
  <currentRule.ctxType> _localctx = new <currentRule.ctxType>(Context, State<currentRule.args:{a | ,
<csIdentifier(a.name)>>});
  EnterLeftFactoredRule(_localctx, <currentRule.startState>, RULE_<currentRule.variantOf>);
  <namedActions.init>
  <locals; separator="\n">
  try {
  <if(currentRule.hasLookaheadBlock)>
    int _alt;
  <endif>
  <code>
  <postamble; separator="\n">
  <namedActions.after>
  }
  catch (RecognitionException re) {
    _localctx.exception = re;
    ErrorHandler.ReportError(this, re);
    ErrorHandler.Recover(this, re);
  }
  finally {
  <finallyAction>
  ExitRule();
  }
  return _localctx;
}
>>

```

```

// This behaves similar to RuleFunction (enterRule is called, and no adjustments
// are made to the parse tree), but since it's still a variant no context class
// needs to be generated.

```

```

LeftUnfactoredRuleFunction(currentRule,args,code,locals,namedActions,finallyAction,postamble) ::=
<<

```

```

<if(currentRule.modifiers)><currentRule.modifiers:{f | <f> }><else>private <endif><currentRule.ctxType>
<csIdentifier(currentRule.name)><(args; separator=", "> {
  <currentRule.ctxType> _localctx = new <currentRule.ctxType>(Context, State<currentRule.args:{a | ,
<csIdentifier(a.name)>>});
  EnterRule(_localctx, <currentRule.startState>, RULE_<currentRule.variantOf>);
  <namedActions.init>
  <locals; separator="\n">

```



```

try {
<if(currentRule.hasLookaheadBlock)>
  int _alt;
<endif>
  <code>
  <postamble; separator="\n">
  <namedActions.after>
  }
catch (RecognitionException re) {
  _localctx.exception = re;
  ErrorHandler.ReportError(this, re);
  ErrorHandler.Recover(this, re);
}
finally {
  <finallyAction>
  ExitRule();
}
return _localctx;
}
>>

```

```

LeftRecursiveRuleFunction(currentRule,args,code,locals,ruleCtx,altLabelCtxs,
namedActions,finallyAction,postamble) ::=
<<

```

```

<ruleCtx>
<altLabelCtxs:{l | <altLabelCtxs.(l)>}; separator="\n">

```

```

[RuleVersion(<namedActions.version; null="0">)]
<if(currentRule.modifiers)><currentRule.modifiers:{f | <f> }><else>public <endif><currentRule.ctxType>
<csIdentifier.(currentRule.name)>(<args; separator=", ">) {
  return <csIdentifier.(currentRule.name)>(0<currentRule.args:{a | , <csIdentifier.(a.name)>}>);
}

```

```

private <currentRule.ctxType> <csIdentifier.(currentRule.name)>(int _p<args:{a | , <a>}>) {
  ParserRuleContext _parentctx = Context;
  int _parentState = State;
  <currentRule.ctxType> _localctx = new <currentRule.ctxType>(Context, _parentState<currentRule.args:{a | ,
<csIdentifier.(a.name)>}>);
  <currentRule.ctxType> _prevctx = _localctx;
  int _startState = <currentRule.startState>;
  EnterRecursionRule(_localctx, <currentRule.startState>, RULE_<currentRule.name>, _p);
  <namedActions.init>
  <locals; separator="\n">
  try {
  <if(currentRule.hasLookaheadBlock)>
    int _alt;
  <endif>

```

```

<code>
<postamble; separator="\n">
<namedActions.after>
}
catch (RecognitionException re) {
  _localctx.exception = re;
  ErrorHandler.ReportError(this, re);
  ErrorHandler.Recover(this, re);
}
finally {
  <finallyAction>
  UnrollRecursionContexts(_parentctx);
}
return _localctx;
}
>>

```

```

CodeBlockForOuterMostAlt(currentOuterMostAltCodeBlock, locals, preamble, ops) ::= <<
<if(currentOuterMostAltCodeBlock.altLabel)>_localctx = new <currentOuterMostAltCodeBlock.altLabel;
format="cap">Context(_localctx);<endif>
EnterOuterAlt(_localctx, <currentOuterMostAltCodeBlock.alt.altNum>);
<CodeBlockForAlt(currentAltCodeBlock=currentOuterMostAltCodeBlock, ...)>
>>

```

```

CodeBlockForAlt(currentAltCodeBlock, locals, preamble, ops) ::= <<
{
<locals; separator="\n">
<preamble; separator="\n">
<ops; separator="\n">
}
>>

```

```

LL1AltBlock(choice, preamble, alts, error) ::= <<
State = <choice.stateNumber>;
ErrorHandler.Sync(this);
<if(choice.label)><labelref(choice.label)> = TokenStream.LT(1);<endif>
<preamble; separator="\n">
switch (TokenStream.LA(1)) {
<choice.altLook,alts:{look,alt| <cases(ttypes=look)>
  <alt>
  break;}; separator="\n">
default:
  <error>
}
>>

```

```

LL1OptionalBlock(choice, alts, error) ::= <<
State = <choice.stateNumber>;

```

```

ErrorHandler.Sync(this);
switch (TokenStream.LA(1)) {
<choice.altLook,alts:{look,alt| <cases(ttypes=look)>
  <alt>
  break;}; separator="\n">
default:
  <error>
}
>>

```

```

LL1OptionalBlockSingleAlt(choice, expr, alts, preamble, error, followExpr) ::= <<
State = <choice.stateNumber>;
ErrorHandler.Sync(this);
<preamble; separator="\n">
if (<expr>) {
  <alts; separator="\n">
}
<!else if ( !(<followExpr> ) <error>!>
>>

```

```

LL1StarBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
State = <choice.stateNumber>;
ErrorHandler.Sync(this);
<preamble; separator="\n">
while (<loopExpr>) {
  <alts; separator="\n">
  State = <choice.loopBackStateNumber>;
  ErrorHandler.Sync(this);
  <iteration>
}
>>

```

```

LL1PlusBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
State = <choice.blockStartStateNumber>;<! alt block decision !>
ErrorHandler.Sync(this);
<preamble; separator="\n">
do {
  <alts; separator="\n">
  State = <choice.stateNumber>;<! loopback/exit decision !>
  ErrorHandler.Sync(this);
  <iteration>
} while ( <loopExpr> );
>>

```

```
// LL(*) stuff
```

```

AltBlock(choice, preamble, alts, error) ::= <<
State = <choice.stateNumber>;

```

```

ErrorHandler.Sync(this);
<if(choice.label)><labelref(choice.label)> = TokenStream.LT(1);<endif>
<preamble; separator="\n">
switch ( Interpreter.AdaptivePredict(TokenStream,<choice.decision>,Context) ) {
<alts:{ alt |
case <i>:
<alt>
break;}; separator="\n">
}
>>

```

```

OptionalBlock(choice, alts, error) ::= <<
State = <choice.stateNumber>;
ErrorHandler.Sync(this);
switch ( Interpreter.AdaptivePredict(TokenStream,<choice.decision>,Context) ) {
<alts:{ alt |
case <i><if(!choice.ast.greedy)>+1<endif>:
<alt>
break;}; separator="\n">
}
>>

```

```

StarBlock(choice, alts, sync, iteration) ::= <<
State = <choice.stateNumber>;
ErrorHandler.Sync(this);
_alt = Interpreter.AdaptivePredict(TokenStream,<choice.decision>,Context);
while ( _alt!=<choice.exitAlt> && _alt!=global::Antlr4.Runtime.Atn.ATN.INVALID_ALT_NUMBER ) {
if ( _alt==1<if(!choice.ast.greedy)>+1<endif> ) {
<iteration>
<alts> <! should only be one !>
}
State = <choice.loopBackStateNumber>;
ErrorHandler.Sync(this);
_alt = Interpreter.AdaptivePredict(TokenStream,<choice.decision>,Context);
}
>>

```

```

PlusBlock(choice, alts, error) ::= <<
State = <choice.blockStartStateNumber>;<! alt block decision !>
ErrorHandler.Sync(this);
_alt = 1<if(!choice.ast.greedy)>+1<endif>;
do {
switch ( _alt ) {
<alts:{ alt|
case <i><if(!choice.ast.greedy)>+1<endif>:
<alt>
break;}; separator="\n">
default:

```

```

<error>
}
State = <choice.loopBackStateNumber>;<! loopback/exit decision !>
ErrorHandler.Sync(this);
_alt = Interpreter.AdaptivePredict(TokenStream,<choice.decision>,Context);
} while ( _alt!=<choice.exitAlt> && _alt!=global::Antlr4.Runtime.Atn.ATN.INVALID_ALT_NUMBER );
>>

Sync(s) ::= "Sync(<s.expecting.name>);"

ThrowNoViableAlt(t) ::= "throw new NoViableAltException(this);"

TestSetInline(s) ::= <<
<s.bitsets:{bits | <if(rest(rest(bits.ttypes)))><bitsetBitfieldComparison(s, bits)><else><bitsetInlineComparison(s,
bits)><endif>} ; separator=" || ">
>>

// Java language spec 15.19 - shift operators mask operands rather than overflow to 0... need range test
testShiftInRange(shiftAmount) ::= <<
((<shiftAmount>) & ~0x3f) == 0
>>

// produces smaller bytecode only when bits.ttypes contains more than two items
bitsetBitfieldComparison(s, bits) ::= <%
(<testShiftInRange({<offsetShift(s.varName, bits.shift)>})> && ((1L \<< <offsetShift(s.varName, bits.shift)>) &
(<bits.ttypes:{ttype | (1L \<< <offsetShift(tokenType.(ttype), bits.shift)>)}); separator=" | ">) != 0)
%>

isZero ::= [
"0":true,
default:false
]

offsetShift(shiftAmount, offset) ::= <%
<if(!isZero.(offset))><shiftAmount> - <offset><else><shiftAmount><endif>
%>

// produces more efficient bytecode when bits.ttypes contains at most two items
bitsetInlineComparison(s, bits) ::= <%
<bits.ttypes:{ttype | <s.varName>==<tokenType.(ttype)>} ; separator=" || ">
%>

cases(ttypes) ::= <<
<ttypes:{t | case <tokenType.(t)>:}; separator="\n">
>>

InvokeRule(r, argExprsChunks) ::= <<
State = <r.stateNumber>; <if(r.labels)><r.labels:{l | <labelref(l)> =

```

```

}><endif><csIdentifier.(r.name)><if(r.ast.options.p)><r.ast.options.p><if(argExprsChunks)>,<endif><endif><arg
ExprsChunks>;
>>

MatchToken(m) ::= <<
State = <m.stateNumber>; <if(m.labels)><m.labels:{1 | <labelref(l)> = }><endif>Match(<tokenType.(m.name)>);
>>

MatchSet(m, expr, capture) ::= "<CommonSetStuff(m, expr, capture, false)>"

MatchNotSet(m, expr, capture) ::= "<CommonSetStuff(m, expr, capture, true)>"

CommonSetStuff(m, expr, capture, invert) ::= <<
State = <m.stateNumber>;
<if(m.labels)><m.labels:{1 | <labelref(l)> = }>TokenStream.LT(1);<endif>
<capture>
if ( <if(invert)><m.varName> \<= 0 || <else>!<endif><expr> ) {
  <if(m.labels)><m.labels:{1 | <labelref(l)> = }><endif>ErrorHandler.RecoverInline(this);
}
else {
  ErrorHandler.ReportMatch(this);
  Consume();
}
>>

Wildcard(w) ::= <<
State = <w.stateNumber>;
<if(w.labels)><w.labels:{1 | <labelref(l)> = }><endif>MatchWildcard();
>>

// ACTION STUFF

Action(a, foo, chunks) ::= "<chunks>"

ArgAction(a, chunks) ::= "<chunks>"

SemPred(p, chunks, failChunks) ::= <<
State = <p.stateNumber>;
if (!<chunks>)) throw new FailedPredicateException(this, <p.predicate><if(failChunks)>,
<failChunks><elseif(p.msg)>, <p.msg><endif>);
>>

ExceptionClause(e, catchArg, catchAction) ::= <<
catch (<catchArg>) {
  <catchAction>
}
>>

```

```
// lexer actions are not associated with model objects
```

```
LexerSkipCommand() ::= "Skip()";  
LexerMoreCommand() ::= "More()";  
LexerPopModeCommand() ::= "PopMode()";
```

```
LexerTypeCommand(arg, grammar) ::= "_type = <tokenType.(arg)>";  
LexerChannelCommand(arg, grammar) ::= "_channel = <channelName.(arg)>";  
LexerModeCommand(arg, grammar) ::= "_mode = <modeName.(arg)>";  
LexerPushModeCommand(arg, grammar) ::= "PushMode(<modeName.(arg)>);"
```

```
ActionText(t) ::= "<t.text>"  
ActionTemplate(t) ::= "<t.st>"  
ArgRef(a) ::= "_localctx.<csIdentifier.(a.name)>"  
LocalRef(a) ::= "_localctx.<csIdentifier.(a.name)>"  
RetValRef(a) ::= "_localctx.<csIdentifier.(a.name)>"  
QRetValRef(a) ::= "<ctx(a)>.<a.dict>.<csIdentifier.(a.name)>"  
/** How to translate $tokenLabel */  
TokenRef(t) ::= "<ctx(t)>.<csIdentifier.(tokenType.(t.name))>"  
LabelRef(t) ::= "<ctx(t)>.<csIdentifier.(t.name)>"  
ListLabelRef(t) ::= "<ctx(t)>.<ListLabelName(csIdentifier.(t.name))>"  
SetAttr(s,rhsChunks) ::= "<ctx(s)>.<csIdentifier.(s.name)> = <rhsChunks>";
```

```
TokenLabelType() ::= "<file.TokenLabelType; null={IToken}>"  
InputSymbolType() ::= "<file.InputSymbolType; null={IToken}>"
```

```
TokenPropertyRef_text(t) ::= "<ctx(t)>.<tokenType.(t.label)>!=null?<ctx(t)>.<tokenType.(t.label)>.Text:null)"  
TokenPropertyRef_type(t) ::= "<ctx(t)>.<tokenType.(t.label)>!=null?<ctx(t)>.<tokenType.(t.label)>.Type:0)"  
TokenPropertyRef_line(t) ::= "<ctx(t)>.<tokenType.(t.label)>!=null?<ctx(t)>.<tokenType.(t.label)>.Line:0)"  
TokenPropertyRef_pos(t) ::=  
"<ctx(t)>.<tokenType.(t.label)>!=null?<ctx(t)>.<tokenType.(t.label)>.CharPositionInLine:0)"  
TokenPropertyRef_channel(t) ::=  
"<ctx(t)>.<tokenType.(t.label)>!=null?<ctx(t)>.<tokenType.(t.label)>.Channel:0)"  
TokenPropertyRef_index(t) ::=  
"<ctx(t)>.<tokenType.(t.label)>!=null?<ctx(t)>.<tokenType.(t.label)>.TokenIndex:0)"  
TokenPropertyRef_int(t) ::=  
"<ctx(t)>.<tokenType.(t.label)>!=null?int.Parse(<ctx(t)>.<tokenType.(t.label)>.Text):0)"
```

```
RulePropertyRef_start(r) ::= "<ctx(r)>.<r.label>!=null?<ctx(r)>.<r.label>.Start:null)"  
RulePropertyRef_stop(r) ::= "<ctx(r)>.<r.label>!=null?<ctx(r)>.<r.label>.Stop:null)"  
RulePropertyRef_text(r) ::=  
"<ctx(r)>.<r.label>!=null?TokenStream.GetText(<ctx(r)>.<r.label>.Start,<ctx(r)>.<r.label>.Stop):null)"  
RulePropertyRef_ctx(r) ::= "<ctx(r)>.<r.label>"  
RulePropertyRef_parser(r) ::= "this"
```

```
ThisRulePropertyRef_start(r) ::= "_localctx.Start"  
ThisRulePropertyRef_stop(r) ::= "_localctx.Stop"  
ThisRulePropertyRef_text(r) ::= "TokenStream.GetText(_localctx.Start, TokenStream.LT(-1))"
```

```

ThisRulePropertyRef_ctx(r) ::= "_localctx"
ThisRulePropertyRef_parser(r) ::= "this"

NonLocalAttrRef(s) ::= <%((<s.ruleName;
format="cap">Context)GetInvokingContext(<s.ruleIndex>)).<csIdentifier.(s.name)>%>
SetNonLocalAttr(s, rhsChunks) ::=
<%((<s.ruleName; format="cap">Context)GetInvokingContext(<s.ruleIndex>)).<csIdentifier.(s.name)> =
<rhsChunks>;%>

AddToLabelList(a) ::= "<ctx(a.label)>.<a.listName>.Add(<labelref(a.label)>);"

TokenDecl(t) ::= "<TokenLabelType() <csIdentifier.(tokenType.(t.name))>"
TokenTypeDecl(t) ::= "int <csIdentifier.(tokenType.(t.name))>);"
TokenListDecl(t) ::= "IList<IToken> <csIdentifier.(tokenType.(t.name))> = new List<IToken>()"
RuleContextDecl(r) ::= "<r.ctxName> <csIdentifier.(r.name)>"
RuleContextListDecl(rdecl) ::= "IList<<rdecl.ctxName>> <csIdentifier.(rdecl.name)> = new
List<<rdecl.ctxName>>()"

contextGetterCollection(elementType) ::= <%
<elementType>[]
%>

ContextTokenGetterDecl(t) ::=
"public ITerminalNode <csIdentifier.(tokenType.(t.name))>() { return
GetToken(<csIdentifier.(parser.name)>.<csIdentifier.(tokenType.(t.name))>, 0); }"
ContextTokenListGetterDecl(t) ::= <<
public <contextGetterCollection("ITerminalNode")> <csIdentifier.(tokenType.(t.name))>() { return
GetTokens(<csIdentifier.(parser.name)>.<csIdentifier.(tokenType.(t.name))>); }
>>
ContextTokenListIndexedGetterDecl(t) ::= <<
public ITerminalNode <csIdentifier.(tokenType.(t.name))>(int i) {
return GetToken(<csIdentifier.(parser.name)>.<csIdentifier.(tokenType.(t.name))>, i);
}
>>
ContextRuleGetterDecl(r) ::= <<
public <r.ctxName> <csIdentifier.(r.name)>() {
return GetRuleContext<<r.ctxName>>();
}
>>
ContextRuleListGetterDecl(r) ::= <<
public <contextGetterCollection({<r.ctxName>})> <csIdentifier.(r.name)>() {
return GetRuleContexts<<r.ctxName>>();
}
>>
ContextRuleListIndexedGetterDecl(r) ::= <<
public <r.ctxName> <csIdentifier.(r.name)>(int i) {
return GetRuleContext<<r.ctxName>>(i);
}
}

```



>>

```
LexerRuleContext() ::= "RuleContext"
```

```
/** The rule context name is the rule followed by a suffix; e.g.,
```

```
* r becomes rContext.
```

```
*/
```

```
RuleContextNameSuffix() ::= "Context"
```

```
ImplicitTokenLabel(tokenName) ::= "_<tokenType.(tokenName)>"
```

```
ImplicitRuleLabel(ruleName) ::= "_<ruleName>"
```

```
ImplicitSetLabel(id) ::= "_tset<id>"
```

```
ListLabelName(label) ::= "_<label>"
```

```
CaptureNextToken(d) ::= "<d.varName> = TokenStream.LT(1);"
```

```
CaptureNextTokenType(d) ::= "<d.varName> = TokenStream.LA(1);"
```

```
StructDecl(struct,ctorAttrs,attrs,getters,dispatchMethods,interfaces,extensionMembers,  
    superClass={ParserRuleContext}) ::= <<
```

```
public partial class <struct.name> :
```

```
<if(contextSuperClass)><contextSuperClass><else>ParserRuleContext<endif><if(interfaces)>, <interfaces;  
separator=", "><endif> {
```

```
<attrs:{ a | public <a>; }; separator="\n">
```

```
<getters:{ g | <g>; }; separator="\n">
```

```
<if(ctorAttrs)>public <struct.name>(ParserRuleContext parent, int invokingState) : base(parent, invokingState) {  
<endif>
```

```
public <struct.name>(ParserRuleContext parent, int invokingState<ctorAttrs:{ a | , <a>}>  
: base(parent, invokingState)
```

```
{
```

```
<struct.ctorAttrs:{ a | this.<csIdentifier.(a.name)> = <csIdentifier.(a.name)>; }; separator="\n">
```

```
}
```

```
public override int RuleIndex { get { return RULE_<struct.derivedFromName>; } }
```

```
<if(struct.provideCopyFrom)><! don't need copy unless we have subclasses !>
```

```
public <struct.name>() { }
```

```
public virtual void CopyFrom(<struct.name> context) {
```

```
base.CopyFrom(context);
```

```
<struct.attrs:{ a | this.<csIdentifier.(a.name)> = context.<csIdentifier.(a.name)>; }; separator="\n">
```

```
}
```

```
<endif>
```

```
<dispatchMethods; separator="\n">
```

```
<extensionMembers; separator="\n">
```

```
}
```

>>

```
AltLabelStructDecl(struct,attrs,getters,dispatchMethods) ::= <<
```

```
public partial class <struct.name> : <currentRule.name; format="cap">Context {
```

```
<attrs:{ a | public <a>; }; separator="\n">
```

```
<getters:{ g | <g>; }; separator="\n">
```

```

public <struct.name>(<currentRule.name; format="cap">Context context) { CopyFrom(context); }
<dispatchMethods; separator="\n">
}
>>

```

```

ListenerDispatchMethod(method) ::= <<
public override void <if(method.isEnter)>Enter<else>Exit<endif>Rule(IParseTreeListener listener) {
I<parser.grammarName>Listener typedListener = listener as I<parser.grammarName>Listener;
if (typedListener != null) typedListener.<if(method.isEnter)>Enter<else>Exit<endif><struct.derivedFromName;
format="cap">(this);
}
>>

```

```

VisitorDispatchMethod(method) ::= <<
public override TResult Accept\<TResult>(IParseTreeVisitor\<TResult> visitor) {
I<parser.grammarName>Visitor\<TResult> typedVisitor = visitor as I<parser.grammarName>Visitor\<TResult>;
if (typedVisitor != null) return typedVisitor.Visit<struct.derivedFromName; format="cap">(this);
else return visitor.VisitChildren(this);
}
>>

```

```

AttributeDecl(d) ::= "<d.type> <csIdentifier.(d.name)><if(d.initValue)> = <d.initValue><endif>"

```

```

/** If we don't know location of label def x, use this template */

```

```

labelref(x) ::= "<if(!x.isLocal)><typedContext(x.ctx)>.<endif><csIdentifier.(x.name)>"

```

```

/** For any action chunk, what is correctly-typed context struct ptr? */

```

```

ctx(actionChunk) ::= "<typedContext(actionChunk.ctx)>"

```

```

// only casts _localctx to the type when the cast isn't redundant (i.e. to a sub-context for a labeled alt)
typedContext(ctx) ::= "<if(ctx.provideCopyFrom)>((<ctx.name>)_localctx)<else>_localctx<endif>"

```

```

// used for left-recursive rules

```

```

recRuleAltPredicate(ruleName,opPrec) ::= "Precpred(Context, <opPrec>)"

```

```

recRuleSetReturnAction(src,name) ::= "$<name>=<src>.<name>";"

```

```

recRuleSetStopToken() ::= "Context.Stop = TokenStream.LT(-1);"

```

```

recRuleAltStartAction(ruleName, ctxName, label, isListLabel) ::= <<

```

```

_localctx = new <ctxName>Context(_parentctx, _parentState);

```

```

<if(label)>

```

```

<if(isListLabel)>

```

```

_localctx.<label>.Add(_prevctx);

```

```

<else>

```

```

_localctx.<label> = _prevctx;

```

```

<endif>

```

```

<endif>

```

```

PushNewRecursionContext(_localctx, _startState, RULE_<ruleName>);

```

```

>>

```

```

recRuleLabeledAltStartAction(ruleName, currentAltLabel, label, isListLabel) ::= <<
    _localctx = new <currentAltLabel; format="cap">Context(new <ruleName; format="cap">Context(_parentctx,
        _parentState));
    <if(label)>
    <if(isListLabel)>
        ((<currentAltLabel; format="cap">Context)_localctx).<label>.Add(_prevctx);
    <else>
        ((<currentAltLabel; format="cap">Context)_localctx).<label> = _prevctx;
    <endif>
    <endif>
    PushNewRecursionContext(_localctx, _startState, RULE_<ruleName>);
>>

```

```

recRuleReplaceContext(ctxName) ::= <<
    _localctx = new <ctxName>Context(_localctx);
    Context = _localctx;
    _prevctx = _localctx;
>>

```

```

recRuleSetPrevCtx() ::= <<
    if ( ParseListeners!=null )
        TriggerExitRuleEvent();
    _prevctx = _localctx;
>>

```

```

LexerFile(file, lexer, namedActions) ::= <<
    <fileHeader(file.grammarFileName, file.ANTLRVersion)>
    <if(file.genPackage)>
        namespace <file.genPackage> {
    <endif>
    <namedActions.header>
    using System;
    using System.Text;
    using Antlr4.Runtime;
    using Antlr4.Runtime.Atn;
    using Antlr4.Runtime.Misc;
    using DFA = Antlr4.Runtime.Dfa.DFA;

    <lexer>
    <if(file.genPackage)>
        } // namespace <file.genPackage>
    <endif>
>>

```

```

Lexer(lexer, atn, actionFuncs, sempredFuncs, superClass) ::= <<
    [System.CodeDom.Compiler.GeneratedCode("ANTLR", "<file.ANTLRVersion>")]

```

```

[System.CLSCompliant(false)]
public partial class <csIdentifier.(lexer.name)> : <superClass; null="Lexer"> {
    protected static DFA[] decisionToDFA;
    protected static PredictionContextCache sharedContextCache = new PredictionContextCache();
    public const int
        <lexer.tokens:{k | <tokenType.(k)>=<lexer.tokens.(k)>}; separator=", ", wrap, anchor>;
    <if(lexer.channels)>
    public const int
        <lexer.channels:{k | <csIdentifier.(k)>=<lexer.channels.(k)>}; separator=", ", wrap, anchor>;
    <endif>
    <rest(lexer.modes):{m| public const int <modeName.(m)> = <i>;}; separator="\n">
    public static string[] modeNames = {
        <lexer.modes:{m| "<m>"}; separator=", ", wrap, anchor>
    };

    public static readonly string[] ruleNames = {
        <lexer.ruleNames:{r | "<r>"}; separator=", ", wrap, anchor>
    };

    <namedActions.members>

    public <csIdentifier.(lexer.name)>(ICharStream input)
        : base(input)
    {
        Interpreter = new LexerATNSimulator(this, _ATN, decisionToDFA, sharedContextCache);
    }

    <vocabulary(lexer.literalNames, lexer.symbolicNames)>

    public override string GrammarFileName { get { return "<lexer.grammarFileName>"; } }

    public override string[] RuleNames { get { return ruleNames; } }

    public override string[] ModeNames { get { return modeNames; } }

    public override string SerializedAtn { get { return _serializedATN; } }

    static <csIdentifier.(lexer.name)>() {
        decisionToDFA = new DFA[_ATN.NumberOfDecisions];
        for (int i = 0; i < _ATN.NumberOfDecisions; i++) {
            decisionToDFA[i] = new DFA(_ATN.GetDecisionState(i), i);
        }
    }
    <dumpActions(lexer, "", actionFuncs, sempredFuncs)>
    <atn>
}
>>

```

```

SerializedATN(model) ::= <<
private static string _serializedATN = _serializeATN();
private static string _serializeATN()
{
    StringBuilder sb = new StringBuilder();
    sb.Append("<model.serialized; wrap={\"};<n><t>sb.Append(\"}>");
    return sb.ToString();
}

public static readonly ATN _ATN =
    new ATNDeserializer().Deserialize(_serializedATN.ToCharArray());

```

```
>>
```

```

initValue(typeName) ::= <<
default(<typeName>)
>>

```

```
codeFileExtension() ::= ".cs"
```

```

modeName ::= [
    "DEFAULT_MODE" : "DefaultMode",
    default : key
]

```

```

channelName ::= [
    "HIDDEN" : "Hidden",
    "DEFAULT_TOKEN_CHANNEL" : "DefaultTokenChannel",
    default : key
]

```

```

tokenType ::= [
    "EOF" : "Eof",
    default : key
]

```

```

csIdentifier ::= [
    "abstract" : "@abstract",
    "as" : "@as",
    "base" : "@base",
    "bool" : "@bool",
    "break" : "@break",
    "byte" : "@byte",
    "case" : "@case",
    "catch" : "@catch",
    "char" : "@char",

```

"checked" : "@checked",  
"class" : "@class",  
"const" : "@const",  
"continue" : "@continue",  
"decimal" : "@decimal",  
"default" : "@default",  
"delegate" : "@delegate",  
"do" : "@do",  
"double" : "@double",  
"else" : "@else",  
"enum" : "@enum",  
"event" : "@event",  
"explicit" : "@explicit",  
"extern" : "@extern",  
"false" : "@false",  
"finally" : "@finally",  
"fixed" : "@fixed",  
"float" : "@float",  
"for" : "@for",  
"foreach" : "@foreach",  
"goto" : "@goto",  
"if" : "@if",  
"implicit" : "@implicit",  
"in" : "@in",  
"int" : "@int",  
"interface" : "@interface",  
"internal" : "@internal",  
"is" : "@is",  
"lock" : "@lock",  
"long" : "@long",  
"namespace" : "@namespace",  
"new" : "@new",  
"null" : "@null",  
"object" : "@object",  
"operator" : "@operator",  
"out" : "@out",  
"override" : "@override",  
"params" : "@params",  
"private" : "@private",  
"protected" : "@protected",  
"public" : "@public",  
"readonly" : "@readonly",  
"ref" : "@ref",  
"return" : "@return",  
"sbyte" : "@sbyte",  
"sealed" : "@sealed",  
"short" : "@short",  
"sizeof" : "@sizeof",

```
"stackalloc" : "@stackalloc",
"static" : "@static",
"string" : "@string",
"struct" : "@struct",
"switch" : "@switch",
"this" : "@this",
"throw" : "@throw",
>true" : "@true",
"try" : "@try",
"typeof" : "@typeof",
"uint" : "@uint",
"ulong" : "@ulong",
"unchecked" : "@unchecked",
"unsafe" : "@unsafe",
"ushort" : "@ushort",
"using" : "@using",
"virtual" : "@virtual",
"void" : "@void",
"volatile" : "@volatile",
"while" : "@while",
default : key
]
```

Found in path(s):

```
* /opt/cola/permits/1166873170_1621514800.65/0/antlr4-4-6-sources-1-
jar/org/antlr/v4/tool/templates/codegen/CSharp/CSharp.stg
```

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```
/*
```

```
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```

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\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/parse/ANTLRParser.java

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\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-

jar/org/antlr/v4/tool/templates/codegen/Cpp/Cpp.stg

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- \*/

```
// File   : A3Lexer.g
// Author  : Jim Idle (jimi@temporal-wave.com)
// Copyright : Free BSD - See @header clause below
// Version  : First implemented as part of ANTLR 3.2 this is the self
//           : hosting ANTLR 3 Lexer.
//
// Description
// -----
// This is the definitive lexer grammar for parsing ANTLR V3.x.x grammars. All other
// grammars are derived from this grammar via source code control integration (perforce)
// or by the gdiff tool.
//
// This grammar and its associated grmmars A3Parser.g and A3Walker.g exhibit the following
// traits, which are recommended for all production quality grammars:
//
// 1) They are separate grammars, not composite grammars;
// 2) They implement all supporting methods in a superclass (at least this is recommended
//    for language targets that support inheritance;
// 3) All errors are pushed as far down the parsing chain as possible, which means
//    that the lexer tries to defer error reporting to the parser, and the parser
```

```
// tries to defer error reporting to a semantic phase consisting of a single
// walk of the AST. The reason for this is that the error messages produced
// from later phases of the parse will generally have better context and so
// be more useful to the end user. Consider the message: "Syntax error at 'options'"
// vs: "You cannot specify two options{ } sections in a single grammar file".
// 4) The lexer is 'programmed' to catch common mistakes such as unterminated literals
// and report them specifically and not just issue confusing lexer mismatch errors.
//
```

```
/** Read in an ANTLR grammar and build an AST. Try not to do
```

```
* any actions, just build the tree.
```

```
*
```

```
* The phases are:
```

```
*
```

```
* A3Lexer.g (this file)
```

```
*     A3Parser.g
```

```
*     A3Verify.g (derived from A3Walker.g)
```

```
* assign.types.g
```

```
* define.g
```

```
* buildnfa.g
```

```
* antlr.print.g (optional)
```

```
* codegen.g
```

```
*
```

```
* Terence Parr
```

```
* University of San Francisco
```

```
* 2005
```

```
* Jim Idle (this v3 grammar)
```

```
* Temporal Wave LLC
```

```
* 2009
```

```
*/
```

```
lexer grammar ANTLRLexer;
```

```
// =====
```

```
// Note that while this grammar does not care about order of constructs
// that don't really matter, such as options before @header etc, it must first
// be parsed by the original v2 parser, before it replaces it. That parser does
// care about order of structures. Hence we are constrained by the v2 parser
// for at least the first bootstrap release that causes this parser to replace
// the v2 version.
```

```
// =====
```

```
// -----
```

```
// Options
```

```
//
```

```
// V3 option directives to tell the tool what we are asking of it for this
```

```
// grammar.
```

```
//
```

```
options {
```

```

// Target language is Java, which is the default but being specific
// here as this grammar is also meant as a good example grammar for
// for users.
//
language    = Java;

// The super class that this lexer should expect to inherit from, and
// which contains any and all support routines for the lexer. This is
// commented out in this baseline (definitive or normative grammar)
// - see the ANTLR tool implementation for hints on how to use the super
// class
//
//superclass = AbstractA3Lexer;
}

tokens { SEMPRED; TOKEN_REF; RULE_REF; LEXER_CHAR_SET; ARG_ACTION; }

```

```

// Include the copyright in this source and also the generated source
//
@lexer::header {
/*
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```

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```

*/

```

```

package org.antlr.v4.parse;
import org.antlr.v4.tool.*;
}

@members {
public static final int COMMENTS_CHANNEL = 2;

public CommonTokenStream tokens; // track stream we push to; need for context info
public boolean isLexerRule = false;

public void grammarError(ErrorType etype, org.antlr.runtime.Token token, Object... args) { }

/** scan backwards from current point in this.tokens list
 * looking for the start of the rule or subrule.
 * Return token or null if for some reason we can't find the start.
 */
public Token getRuleOrSubruleStartToken() {
    if ( tokens==null ) return null;
    int i = tokens.index();
    int n = tokens.size();
    if ( i>=n ) i = n-1; // seems index == n as we lex
    while ( i>=0 && i<n ) {
        int ttype = tokens.get(i).getType();
        if ( ttype == LPAREN || ttype == TOKEN_REF || ttype == RULE_REF ) {
            return tokens.get(i);
        }
        i--;
    }
    return null;
}

// -----
// Comments
//
// ANTLR comments can be multi or single line and we don't care
// which particularly. However we also accept Javadoc style comments
// of the form: /** ... */ and we do take care to distinguish those
// from ordinary multi-line comments
// Note how we guide the lexical PATH because we want to issue a decriptive
// error message in case of a standalone '/' character, which makes no
// sense in ANTLR source code. We also trap unterminated multi-line comments
//
fragment DOC_COMMENT : ;
COMMENT
@init {

```

```

// Record the start line and offsets as if we need to report an
// unterminated comment, then we want to show the start of the comment
// we think is broken, not the end, where people will have to try and work
// it out themselves.
//
int startLine = $line;
int offset = getCharPositionInLine();
}
: // Eat the first character only, then see if we have a comment
// or something silly.
//
'/' // Comment introducer

(
// Single line comment, possibly with embedded src/line directives
// in a similar style to the C pre-processor, allowing generated
// code to refer the programmer back to the original source code
// in case of error.
//
'/'
(
(' $ANTLR')=> ' $ANTLR' SRC
| ~(NLCHARS)*
)

| // Multi-line comment, which may be a documentation comment
// if it starts /** (note that we protect against accidentally
// recognizing a comment /**/ as a documentation comment
//
'/*! (
{ input.LA(2) != '/' }?=> '*' { $type = DOC_COMMENT; }
| { true }?=> // Required to cover all alts with predicates
)

// Should we support embedded multiline comments here?
//
(
// Pick out end of multiline comment and exit the loop
// if we find it.
//
{ !(input.LA(1) == '*' && input.LA(2) == '/') }?

// Anything else other than the non-greedy match of
// the comment close sequence
//
.
)*
(

```

```

        // Look for the comment terminator, but if it is accidentally
        // unterminated, then we will hit EOF, which will trigger the
        // epsilon alt and hence we can issue an error message relative
        // to the start of the unterminated multi-line comment
        //
        /*'

|// Unterminated comment!
//
{
    // ErrorManager.msg(Msg.UNTERMINATED_DOC_COMMENT, startLine, offset, $pos, startLine,
offset, $pos, (Object)null);
}
)

|// There was nothing that made sense following the opening '/' and so
// we issue an error regarding the malformed comment
//
{
    // TODO: Insert error message relative to comment start
    //
}
)
{
    // We do not wish to pass the comments in to the parser. If you are
    // writing a formatter then you will want to preserve the comments off
    // channel, but could just skip and save token space if not.
    //
    $channel=COMMENTS_CHANNEL;
}
;

ARG_OR_CHARSET
options {k=1;}
: {isLexerRule}?=> LEXER_CHAR_SET {$type=LEXER_CHAR_SET;}
| {!isLexerRule}?=> ARG_ACTION
{
    $type=ARG_ACTION;
    // Set the token text to our gathered string minus outer [ ]
    String t = $text;
    t = t.substring(1,t.length()-1);
    setText(t);
}
;

fragment
LEXER_CHAR_SET
: '['

```

```

( '\\ ~(\r|\n)
| ~(\r|\n|\\|']')
)*
]'
;

// -----
// Argument specs
//
// Certain argument lists, such as those specifying call parameters
// to a rule invocation, or input parameters to a rule specification
// are contained within square brackets. In the lexer we consume them
// all at once and sort them out later in the grammar analysis.
//
fragment
ARG_ACTION
: '['
  (
    ARG_ACTION

    | ('')=>ACTION_STRING_LITERAL

    | ('\')=>ACTION_CHAR_LITERAL

    | ~(['|'])
  )*
  ']'
;

// -----
// Actions
//
// Other than making sure to distinguish between { and } embedded
// within what we have assumed to be literals in the action code, the
// job of the lexer is merely to gather the code within the action
// (delimited by { }) and pass it to the parser as a single token.
// We know that this token will be asked for its text somewhere
// in the upcoming parse, so setting the text here to exclude
// the delimiting { } is no additional overhead.
//
ACTION
: NESTED_ACTION
  ('?' {$type = SEMPRED;}
  ( (WSNLCHARS* '=>') => WSNLCHARS* '=>' // v3 gated sempred
  {
    Token t = new CommonToken(input, state.type, state.channel, state.tokenStartCharIndex, getCharIndex()-1);
    t.setLine(state.tokenStartLine);
  }
  )
  )
;

```

```

t.setText(state.text);
t.setCharPositionInLine(state.tokenStartCharPositionInLine);
grammarError(ErrorType.V3_GATED_SEMPRED, t);
}
)?
)?
;

// -----
// Action structure
//
// Many language targets use {} as block delimiters and so we
// must recursively match {} delimited blocks to balance the
// braces. Additionally, we must make some assumptions about
// literal string representation in the target language. We assume
// that they are delimited by ' or " and so consume these
// in their own alts so as not to inadvertently match {}.
// This rule calls itself on matching a {
//
fragment
NESTED_ACTION
@init {

// Record the start line and offsets as if we need to report an
// unterminated block, then we want to show the start of the comment
// we think is broken, not the end, where people will have to try and work
// it out themselves.
//
int startLine = getLine();
int offset = getCharPositionInLine();
}

: // Action and other blocks start with opening {
//
'{'
(
// And now we can match one of a number of embedded
// elements within the action until we find a
// } that balances the opening {. If we do not find
// the balanced } then we will hit EOF and can issue
// an error message about the brace that we believe to
// be mismatched. This won't be foolproof but we will
// be able to at least report an error against the
// opening brace that we feel is in error and this will
// guide the user to the correction as best we can.
//

```



```

    // An embedded {} block
    //
    NESTED_ACTION

|// What appears to be a literal
//
ACTION_CHAR_LITERAL

|// We have assumed that the target language has C/Java
// type comments.
//
COMMENT

|// What appears to be a literal
//
ACTION_STRING_LITERAL

|// What appears to be an escape sequence
//
ACTION_ESC

|// Some other single character that is not
// handled above
//
~(\\|'|\"|'|'{'|'})

)*

(
// Correctly balanced closing brace
//
}'

|// Looks like have an imbalanced {} block, report
// with respect to the opening brace.
//
{
// TODO: Report imbalanced {}
System.out.println("Block starting at line " + startLine + " offset " + (offset+1) + " contains imbalanced {} or
is missing a }");
}
)
;

// Keywords
// -----
// keywords used to specify ANTLR v3 grammars. Keywords may not be used as

```

```

// labels for rules or in any other context where they would be ambiguous
// with the keyword vs some other identifier
// OPTIONS, TOKENS, and CHANNELS must also consume the opening brace that captures
// their option block, as this is the easiest way to parse it separate
// to an ACTION block, despite it using the same {} delimiters.
//
OPTIONS    : 'options' WSNLCHARS* '{' ;
TOKENS_SPEC : 'tokens' WSNLCHARS* '{' ;
CHANNELS   : 'channels' WSNLCHARS* '{' ;

IMPORT     : 'import'      ;
FRAGMENT   : 'fragment'   ;
LEXER      : 'lexer'      ;
PARSER     : 'parser'     ;
GRAMMAR    : 'grammar'    ;
TREE_GRAMMAR : 'tree' WSNLCHARS* 'grammar' ;
PROTECTED  : 'protected'  ;
PUBLIC     : 'public'     ;
PRIVATE    : 'private'    ;
RETURNS    : 'returns'    ;
LOCALS     : 'locals'     ;
THROWS     : 'throws'     ;
CATCH      : 'catch'      ;
FINALLY    : 'finally'    ;
MODE       : 'mode'       ;

// -----
// Punctuation
//
// Character sequences used as separators, delimiters, operators, etc
//
COLON      : ':'
    {
        // scan backwards, looking for a RULE_REF or TOKEN_REF.
        // which would indicate the start of a rule definition.
        // If we see a LPAREN, then it's the start of the subrule.
        // this.tokens is the token string we are pushing into, so
        // just loop backwards looking for a rule definition. Then
        // we set isLexerRule.
        Token t = getRuleOrSubruleStartToken();
        if ( t!=null ) {
            if ( t.getType()==RULE_REF ) isLexerRule = false;
            else if ( t.getType()==TOKEN_REF ) isLexerRule = true;
            // else must be subrule; don't alter context
        }
    }
;
COLONCOLON : '::'      ;

```

```

COMMA      :','          ;
SEMI       :';'          ;
LPAREN     :'('          ;
RPAREN     :')'          ;
RARROW     :'->'        ;
LT         : '<'          ;
GT         : '>'          ;
ASSIGN     : '='         ;
QUESTION   : '?'         ;
SYNPRED    : '=>'
    {
        Token t = new CommonToken(input, state.type, state.channel,
            state.tokenStartCharIndex, getCharIndex()-1);
        t.setLine(state.tokenStartLine);
        t.setText(state.text);
        t.setCharPositionInLine(state.tokenStartCharPositionInLine);
        grammarError(ErrorType.V3_SYNPRED, t);
        $channel=HIDDEN;
    }
    ;
STAR       : '*'          ;
PLUS       : '+'          ;
PLUS_ASSIGN : '+='        ;
OR         : '|'          ;
DOLLAR     : '$'          ;
DOT        : '.'          ; // can be WILDCARD or DOT in qid or imported rule ref
RANGE      : '..'         ;
AT         : '@'          ;
POUND      : '#'          ;
NOT        : '~'          ;
RBRACE     : '}'          ;

/** Allow unicode rule/token names */
ID : a=NameStartChar NameChar*
    {
        if ( Grammar.isTokenName($a.text) ) $type = TOKEN_REF;
        else $type = RULE_REF;
    }
    ;

fragment
NameChar : NameStartChar
    | '0'..'9'
    | '_'
    | '\u00B7'
    | '\u0300'..\u036F'
    | '\u203F'..\u2040'
    ;

```

```

fragment
NameStartChar
    : 'A'..'Z' | 'a'..'z'
    | '\u00C0'..\u00D6'
    | '\u00D8'..\u00F6'
    | '\u00F8'..\u02FF'
    | '\u0370'..\u037D'
    | '\u037F'..\u1FFF'
    | '\u200C'..\u200D'
    | '\u2070'..\u218F'
    | '\u2C00'..\u2FEF'
    | '\u3001'..\uD7FF'
    | '\uF900'..\uFDCF'
    | '\uFDF0'..\uFEFE'
    | '\uFF00'..\uFFFD'
    ; // ignores | [\u10000-\uEFFFF] ;

// -----
// Literals embedded in actions
//
// Note that we have made the assumption that the language used within
// actions uses the fairly standard " and ' delimiters for literals and
// that within these literals, characters are escaped using the \ character.
// There are some languages which do not conform to this in all cases, such
// as by using /string/ and so on. We will have to deal with such cases if
// if they come up in targets.
//
// Within actions, or other structures that are not part of the ANTLR
// syntax, we may encounter literal characters. Within these, we do
// not want to inadvertently match things like '}' and so we eat them
// specifically. While this rule is called CHAR it allows for the fact that
// some languages may use/allow ' as the string delimiter.
//
fragment
ACTION_CHAR_LITERAL
: "\"" ((\\)=>ACTION_ESC | ~\" )* "\""
;

// Within actions, or other structures that are not part of the ANTLR
// syntax, we may encounter literal strings. Within these, we do
// not want to inadvertently match things like '}' and so we eat them
// specifically.
//
fragment
ACTION_STRING_LITERAL
: "\"" ((\\)=>ACTION_ESC | ~\" )* "\""

```

```

;

// Within literal strings and characters that are not part of the ANTLR
// syntax, we must allow for escaped character sequences so that we do not
// inadvertently recognize the end of a string or character when the terminating
// delimiter has been escaped.
//
fragment
ACTION_ESC
: '\\' .
;

// -----
// Integer
//
// Obviously (I hope) match an arbitrary long sequence of digits.
//
INT : ('0'..'9')+
;

// -----
// Source spec
//
// A fragment rule for picking up information about an originating
// file from which the grammar we are parsing has been generated. This allows
// ANTLR to report errors against the originating file and not the generated
// file.
//
fragment
SRC : 'src' WSCHARS+ file=ACTION_STRING_LITERAL WSCHARS+ line=INT
{
    // TODO: Add target specific code to change the source file name and current line number
    //
}
;

// -----
// Literal string
//
// ANTLR makes no distinction between a single character literal and a
// multi-character string. All literals are single quote delimited and
// may contain unicode escape sequences of the form \uxxxx, where x
// is a valid hexadecimal number (as per Java basically).
STRING_LITERAL
: '\" ( ( ESC_SEQ | ~(\"|'|\|'|\r|\n') ) ) *
( '\"
| // Unterminated string literal
{

```

```

    Token t = new CommonToken(input, state.type, state.channel, state.tokenStartCharIndex, getCharIndex()-1);
    t.setLine(state.tokenStartLine);
    t.setText(state.text);
    t.setCharacterPositionInLine(state.tokenStartCharPositionInLine);
    grammarError(ErrorType.UNTERMINATED_STRING_LITERAL, t);
}
)
;

// A valid hex digit specification
//
fragment
HEX_DIGIT : ('0'..'9'|'a'..'f'|'A'..'F') ;

// Any kind of escaped character that we can embed within ANTLR
// literal strings.
//
fragment
ESC_SEQ
: '\\'
(
    // The standard escaped character set such as tab, newline,
    // etc.
    //
    'b'|'t'|'n'|'f'|'r'|'\"'|'\\'|'\'|'\'\'

| // A Java style Unicode escape sequence
//
UNICODE_ESC

| // An illegal escape sequence
//
{
    Token t = new CommonToken(input, state.type, state.channel, getCharIndex()-1, getCharIndex());
    t.setText(t.getText());
    t.setLine(input.getLine());
    t.setCharacterPositionInLine(input.getCharPositionInLine()-1);
    grammarError(ErrorType.INVALID_ESCAPE_SEQUENCE, t);
}
)
;

fragment
UNICODE_ESC

@init {

// Flag to tell us whether we have a valid number of

```

```

// hex digits in the escape sequence
//
int hCount = 0;
}
: 'u' // Leadin for unicode escape sequence

// We now require 4 hex digits. Note though
// that we accept any number of characters
// and issue an error if we do not get 4. We cannot
// use an infinite count such as + because this
// might consume too many, so we lay out the lexical
// options and issue an error at the invalid paths.
//
(
  (
    HEX_DIGIT { hCount++; }
    (
      HEX_DIGIT { hCount++; }
      (
        HEX_DIGIT { hCount++; }
        (
          // Four valid hex digits, we are good
          //
          HEX_DIGIT { hCount++; }

          | // Three valid digits
        )

        | // Two valid digits
      )

      | // One valid digit
    )
  )
  | // No valid hex digits at all
)

// Now check the digit count and issue an error if we need to
//
{
  if (hCount != 4) {
    Token t = new CommonToken(input, state.type, state.channel, getCharIndex()-3-hCount, getCharIndex()-
1);
    t.setText(t.getText());
    t.setLine(input.getLine());
    t.setCharPositionInLine(input.getCharPositionInLine()-hCount-2);
    grammarError(ErrorType.INVALID_ESCAPE_SEQUENCE, t);
  }
}

```

```

    }
    ;

// -----
// Whitespace
//
// Characters and character constructs that are of no import
// to the parser and are used to make the grammar easier to read
// for humans.
//
WS
: (
    ' '
    | '\t'
    | '\r'
    | '\n'
    | '\f'
    )+
    {$channel=HIDDEN;}
;

// A fragment rule for use in recognizing end of line in
// rules like COMMENT.
//
fragment
NLCHARS
: '\n' | '\r'
;

// A fragment rule for recognizing traditional whitespace
// characters within lexer rules.
//
fragment
WSCHARS
: ' ' | '\t' | '\f'
;

// A fragment rule for recognizing both traditional whitespace and
// end of line markers, when we don't care to distinguish but don't
// want any action code going on.
//
fragment
WSNLCHARS
: ' ' | '\t' | '\f' | '\n' | '\r'
;

// This rule allows ANTLR 4 to parse grammars using the UTF-8 encoding with a
// byte order mark. Since this Unicode character doesn't appear as a token

```



```

// anywhere else in the grammar, we can simply skip all instances of it without
// problem. This rule will not break usage of \uFEFF inside a LEXER_CHAR_SET or
// STRING_LITERAL.
UnicodeBOM
  : '\uFEFF' {skip();}
  ;

// -----
// Illegal Character
//
// This is an illegal character trap which is always the last rule in the
// lexer specification. It matches a single character of any value and being
// the last rule in the file will match when no other rule knows what to do
// about the character. It is reported as an error but is not passed on to the
// parser. This means that the parser to deal with the gramamr file anyway
// but we will not try to analyse or code generate from a file with lexical
// errors.
//
ERRCHAR
  : .
  {
    Token t = new CommonToken(input, state.type, state.channel, state.tokenStartCharIndex, getCharIndex()-1);
    t.setLine(state.tokenStartLine);
    t.setText(state.text);
    t.setCharPositionInLine(state.tokenStartCharPositionInLine);
    String msg = getTokenErrorDisplay(t) + " came as a complete surprise to me";
    grammarError(ErrorType.SYNTAX_ERROR, t, msg);
    state.syntaxErrors++;
    skip();
  }
  ;

```

Found in path(s):

\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/parse/ANTLRLexer.g

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\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/parse/ATNBuilder.java

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\*/

```

/** Find left-recursive rules */
tree grammar LeftRecursiveRuleWalker;

options {
    tokenVocab=ANTLRParser;
    ASTLabelType=GrammarAST;
}

@header {
package org.antlr.v4.parse;

import org.antlr.v4.misc.*;
import org.antlr.v4.tool.*;
import org.antlr.v4.tool.ast.*;
}

@members {
private String ruleName;
private int currentOuterAltNumber; // which outer alt of rule?
public int numAlts; // how many alts for this rule total?

public void setAltAssoc(AltAST altTree, int alt) {}
public void binaryAlt(AltAST altTree, int alt) {}
public void prefixAlt(AltAST altTree, int alt) {}
public void suffixAlt(AltAST altTree, int alt) {}
public void otherAlt(AltAST altTree, int alt) {}
public void setReturnValues(GrammarAST t) {}
}

@rulecatch { }

// TODO: can get parser errors for not matching pattern; make them go away
public
rec_rule returns [boolean isLeftRec]
@init
{
    currentOuterAltNumber = 1;
}
: ^( r=RULE id=RULE_REF {ruleName=$id.getText();}
    ruleModifier?
// (ARG_ACTION)? shouldn't allow args, right?
    (^ (RETURNS a=ARG_ACTION {setReturnValues($a;)})) ?
// ( ^ (THROWS .+) ) ? don't allow
    ( ^ (LOCALS ARG_ACTION) ) ? // TODO: copy these to gen'd code
    ( ^ (OPTIONS .* )
    | ^ (AT ID ACTION) // TODO: copy
    ) *
    ruleBlock { $isLeftRec = $ruleBlock.isLeftRec; }

```

```

    exceptionGroup
  )
;

exceptionGroup
  : exceptionHandler* finallyClause?
;

exceptionHandler
  : ^(CATCH ARG_ACTION ACTION)
;

finallyClause
  : ^(FINALLY ACTION)
;

ruleModifier
  : PUBLIC
  | PRIVATE
  | PROTECTED
;

ruleBlock returns [boolean isLeftRec]
@init{boolean lr=false; this.numAlts = $start.getChildCount();}
  : ^( BLOCK
    (
      o=outerAlternative
      {if ($o.isLeftRec) $isLeftRec = true;}
      {currentOuterAltNumber++;}
    )+
  )
;

/** An alt is either prefix, suffix, binary, or ternary operation or "other" */
outerAlternative returns [boolean isLeftRec]
  : (binary)=>    binary
                    {binaryAlt((AltAST)$start, currentOuterAltNumber); $isLeftRec=true;}
  | (prefix)=>    prefix
                    {prefixAlt((AltAST)$start, currentOuterAltNumber);}
  | (suffix)=>    suffix
                    {suffixAlt((AltAST)$start, currentOuterAltNumber); $isLeftRec=true;}
  | nonLeftRecur  {otherAlt((AltAST)$start, currentOuterAltNumber);}
;

binary
  : ^( ALT elementOptions? recurse element* recurse epsilonElement* )
    {setAltAssoc((AltAST)$ALT,currentOuterAltNumber);}
;

```

```

prefix
: ^( ALT elementOptions?
  element+
  recurse epsilonElement*
)
  {setAltAssoc((AltAST)$ALT,currentOuterAltNumber);}
;

suffix
: ^( ALT elementOptions? recurse element+ )
  {setAltAssoc((AltAST)$ALT,currentOuterAltNumber);}
;

nonLeftRecur
: ^(ALT elementOptions? element+)
;

recurse
: ^(ASSIGN ID recurseNoLabel)
| ^(PLUS_ASSIGN ID recurseNoLabel)
| recurseNoLabel
;

recurseNoLabel : {((CommonTree)input.LT(1)).getText().equals(ruleName)}? RULE_REF;

token returns [GrammarAST t=null]
: ^(ASSIGN ID s=token {$t = $s.t;})
| ^(PLUS_ASSIGN ID s=token {$t = $s.t;})
| b=STRING_LITERAL      {$t = $b;}
| ^(b=STRING_LITERAL elementOptions) {$t = $b;}
| ^(c=TOKEN_REF elementOptions) {$t = $c;}
| c=TOKEN_REF          {$t = $c;}
;

elementOptions
: ^(ELEMENT_OPTIONS elementOption*)
;

elementOption
: ID
| ^(ASSIGN ID ID)
| ^(ASSIGN ID STRING_LITERAL)
| ^(ASSIGN ID ACTION)
| ^(ASSIGN ID INT)
;

element

```

```
: atom
| ^(NOT element)
| ^(RANGE atom atom)
| ^(ASSIGN ID element)
| ^(PLUS_ASSIGN ID element)
| ^(SET setElement+)
| RULE_REF
| ebnf
| epsilonElement
;
```

epsilonElement

```
: ACTION
| SEMPRED
| EPSILON
| ^(ACTION elementOptions)
| ^(SEMPRED elementOptions)
;
```

setElement

```
: ^(STRING_LITERAL elementOptions)
| ^(TOKEN_REF elementOptions)
| STRING_LITERAL
| TOKEN_REF
;
```

ebnf: block

```
| ^( OPTIONAL block )
| ^( CLOSURE block )
| ^( POSITIVE_CLOSURE block )
;
```

block

```
: ^(BLOCK ACTION? alternative+)
;
```

alternative

```
: ^(ALT elementOptions? element+)
;
```

atom

```
: ^(RULE_REF ARG_ACTION? elementOptions?)
| ^(STRING_LITERAL elementOptions)
| STRING_LITERAL
| ^(TOKEN_REF elementOptions)
| TOKEN_REF
| ^(WILDCARD elementOptions)
| WILDCARD
```

| ^(DOT ID element)

;

Found in path(s):

\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/parse/LeftRecursiveRuleWalker.g

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\*/

atn(startState, states, edges, rankdir, decisionRanks, useBox) ::= <<

digraph ATN {

rankdir=LR;

<decisionRanks; separator="\n">

<states; separator="\n">

<edges; separator="\n">

}

>>

dfa(name, startState, states, edges, rankdir, decisionRanks, useBox) ::= <<

```

digraph <name> {
<if(rankdir)>rankdir=<rankdir>;<endif>
<decisionRanks; separator="\n">
<states; separator="\n">
<edges; separator="\n">
}
>>

decision-rank(states) ::= <<
{rank=same; rankdir=TB; <states:{s | s<s>}; separator=" "; ">}
>>

edge(src,target,label,arrowhead,transitionIndex) ::= <<
<src><if(transitionIndex)>:p<transitionIndex><endif> -> <target> [fontsize=11, fontname="Courier", arrowsize=.7,
label = "<label>"<if(arrowhead)>, arrowhead = <arrowhead><endif>];
>>

action-edge(src,target,label,arrowhead,transitionIndex) ::= <<
<src><if(transitionIndex)>:p<transitionIndex><endif> -> <target> [fontsize=11, fontname="Courier", arrowsize=.7,
label = "<label>"<if(arrowhead)>, arrowhead = <arrowhead><endif>];
>>

epsilon-edge(src,label,target,arrowhead,transitionIndex,loopback=false) ::= <<
<src><if(transitionIndex)>:p<transitionIndex><endif> -> <target> [fontname="Times-Italic",
label="&epsilon;"<if(loopback)>, style="dashed"<endif>];
>>

state(state, label, name, transitions) ::= <%
<name>[fontsize=11,
label="
    <! rest(transition) tests for decision states: these nodes have a non-empty set of transitions after the first one. !>
    <if(rest(transitions))>
        {
            <! Label on the left side of the record node. !>
            <label>
            |
            <! Named ports in order on right side of record node, no display text. !>
            {<transitions:{t|\<p<i0>>}; separator="|">}}
        <else>
            <label>
        <endif>
        "
    <if(rest(transitions))>
        , shape=record, fixedsize=false
    <else>
        , shape=circle, fixedsize=true, width=.55
    <endif>
    , peripheries=1];

```



%>

```
stopstate(name,label,actionIndex,useBox) ::= <<
<name>[fontsize=11, label="<label><if(actionIndex)>,\naction:<actionIndex><endif>",
<if(useBox)>shape=polygon,sides=4,peripheries=2,fixedsz=0<else>shape=doublecircle, fixedsz=1,
width=.6<endif>];
>>
```

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```
* /opt/cola/permits/1166873170_1621514800.65/0/antlr4-4-6-sources-1-
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```
*/
```

```
javaTypeInitMap ::= [
```

```
  "int": "0",
```

```
  "long": "0",
```

```
  "float": "0.0f",
```

```
  "double": "0.0",
```

```

"boolean":"false",
"byte":"0",
"short":"0",
"char":"0",
default:"null" // anything other than a primitive type is an object
]

```

```
// args must be <object-model-object>, <fields-resulting-in-STs>
```

```

ParserFile(file, parser, namedActions, contextSuperClass) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
package <file.genPackage>;
<endif>
<namedActions.header>
import org.antlr.v4.runtime.atn.*;
import org.antlr.v4.runtime.dfa.DFA;
import org.antlr.v4.runtime.*;
import org.antlr.v4.runtime.misc.*;
import org.antlr.v4.runtime.tree.*;
import java.util.List;
import java.util.Iterator;
import java.util.ArrayList;

<parser>
>>

```

```

ListenerFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
package <file.genPackage>;
<endif>
<header>
import org.antlr.v4.runtime.tree.ParseTreeListener;

/**
 * This interface defines a complete listener for a parse tree produced by
 * { @link <file.parserName> }.
 */
public interface <file.grammarName>Listener extends ParseTreeListener {
    <file.listenerNames>:{Iname |
/**
<if(file.listenerLabelRuleNames.(Iname))>
 * Enter a parse tree produced by the { @code <Iname>}
 * labeled alternative in { @link <file.parserName>#<file.listenerLabelRuleNames.(Iname)>}.
<else>
 * Enter a parse tree produced by { @link <file.parserName>#<Iname>}.
<endif>

```

```

* @param ctx the parse tree
*/
void enter<lname; format="cap">(<file.parserName>.<lname; format="cap">Context ctx);
/**
<if(file.listenerLabelRuleNames.(lname))>
* Exit a parse tree produced by the { @code <lname>\}
* labeled alternative in { @link <file.parserName>#<file.listenerLabelRuleNames.(lname)>\}.
<else>
* Exit a parse tree produced by { @link <file.parserName>#<lname>\}.
<endif>
* @param ctx the parse tree
*/
void exit<lname; format="cap">(<file.parserName>.<lname; format="cap">Context ctx);}; separator="\n">
}
>>

```

```

BaseListenerFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
package <file.genPackage>;
<endif>
<header>

```

```

import org.antlr.v4.runtime.ParserRuleContext;
import org.antlr.v4.runtime.tree.ErrorNode;
import org.antlr.v4.runtime.tree.TerminalNode;

```

```

/**
* This class provides an empty implementation of { @link <file.grammarName>Listener},
* which can be extended to create a listener which only needs to handle a subset
* of the available methods.
*/
public class <file.grammarName>BaseListener implements <file.grammarName>Listener {
<file.listenerNames: {lname |
/**
* { @inheritDoc\}
*
* \<p>The default implementation does nothing.\</p>
*/
@Override public void enter<lname; format="cap">(<file.parserName>.<lname; format="cap">Context ctx) { \}
/**
* { @inheritDoc\}
*
* \<p>The default implementation does nothing.\</p>
*/
@Override public void exit<lname; format="cap">(<file.parserName>.<lname; format="cap">Context ctx) { \};
separator="\n">

```

```

/**
 * {@inheritDoc\}
 *
 * \<p>The default implementation does nothing.\</p>
 */
@Override public void enterEveryRule(ParserRuleContext ctx) { }
/**
 * {@inheritDoc\}
 *
 * \<p>The default implementation does nothing.\</p>
 */
@Override public void exitEveryRule(ParserRuleContext ctx) { }
/**
 * {@inheritDoc\}
 *
 * \<p>The default implementation does nothing.\</p>
 */
@Override public void visitTerminal(TerminalNode node) { }
/**
 * {@inheritDoc\}
 *
 * \<p>The default implementation does nothing.\</p>
 */
@Override public void visitErrorNode(ErrorNode node) { }
}
>>

VisitorFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
package <file.genPackage>;
<endif>
<header>
import org.antlr.v4.runtime.tree.ParseTreeVisitor;

/**
 * This interface defines a complete generic visitor for a parse tree produced
 * by { @link <file.parserName> }.
 *
 * @param \<T> The return type of the visit operation. Use { @link Void } for
 * operations with no return type.
 */
public interface <file.grammarName>Visitor\<T> extends ParseTreeVisitor\<T> {
  <file.visitorNames:{ Iname |
/**
<if(file.visitorLabelRuleNames.(Iname))>
 * Visit a parse tree produced by the { @code <Iname>}
 * labeled alternative in { @link <file.parserName>#<file.visitorLabelRuleNames.(Iname)>}|.

```

```

<else>
* Visit a parse tree produced by { @link <file.parserName>#<lname>\}.
<endif>
* @param ctx the parse tree
* @return the visitor result
*/
T visit<lname; format="cap">(<file.parserName>.<lname; format="cap">Context ctx);}; separator="\n">
}
>>

BaseVisitorFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
package <file.genPackage>;
<endif>
<header>
import org.antlr.v4.runtime.tree.AbstractParseTreeVisitor;

/**
* This class provides an empty implementation of { @link <file.grammarName>Visitor},
* which can be extended to create a visitor which only needs to handle a subset
* of the available methods.
*
* @param \<T> The return type of the visit operation. Use { @link Void} for
* operations with no return type.
*/
public class <file.grammarName>BaseVisitor<T> extends AbstractParseTreeVisitor<T> implements
<file.grammarName>Visitor<T> {
<file.visitorNames>{ lname |
/**
* { @inheritDoc\}
*
* \<p>The default implementation returns the result of calling
* { @link #visitChildren\} on { @code ctx\}.\</p>
*/
@Override public T visit<lname; format="cap">(<file.parserName>.<lname; format="cap">Context ctx) { return
visitChildren(ctx); \} }; separator="\n">
}
>>

fileHeader(grammarFileName, ANTLRVersion) ::= <<
// Generated from <grammarFileName; format="java-escape"> by ANTLR <ANTLRVersion>
>>

Parser(parser, funcs, atn, sempredFuncs, superClass) ::= <<
<Parser_(ctor="parser_ctor", ...)>
>>

```

```

Parser_(parser, funcs, atn, sempredFuncs, ctor, superClass) ::= <<
@SuppressWarnings({"all", "warnings", "unchecked", "unused", "cast"})
public class <parser.name> extends <superClass; null="Parser"> {
    static { RuntimeMetaData.checkVersion("<file.ANTLRVersion>", RuntimeMetaData.VERSION); }

    protected static final DFA[] _decisionToDFA;
    protected static final PredictionContextCache _sharedContextCache =
        new PredictionContextCache();
    <if(parser.tokens)>
    public static final int
        <parser.tokens:{k | <k>=<parser.tokens.(k)>}; separator=", ", wrap, anchor>;
    <endif>
    public static final int
        <parser.rules:{r | RULE_<r.name> = <r.index>}; separator=", ", wrap, anchor>;
    public static final String[] ruleNames = {
        <parser.ruleNames:{r | "<r>"}; separator=", ", wrap, anchor>
    };

    <vocabulary(parser.literalNames, parser.symbolicNames)>

    @Override
    public String getGrammarFileName() { return "<parser.grammarFileName; format="java-escape">"; }

    @Override
    public String[] getRuleNames() { return ruleNames; }

    @Override
    public String getSerializedATN() { return _serializedATN; }

    @Override
    public ATN getATN() { return _ATN; }

    <namedActions.members>
    <parser:(ctor)>
    <funcs; separator="\n">

    <if(sempredFuncs)>
    public boolean sempred(RuleContext _localctx, int ruleIndex, int predIndex) {
        switch (ruleIndex) {
            <parser.sempredFuncs.values:{f}
        case <f.ruleIndex>:
            return <f.name>_sempred((<f.ctxType>)_localctx, predIndex);}; separator="\n">
        }
        return true;
    }
    <sempredFuncs.values; separator="\n">
    <endif>

```

```

<atn>
}
>>

vocabulary(literalNames, symbolicNames) ::= <<
private static final String[] _LITERAL_NAMES = {
<literalNames:{t | <t>}; null="null", separator=", ", wrap, anchor>
};
private static final String[] _SYMBOLIC_NAMES = {
<symbolicNames:{t | <t>}; null="null", separator=", ", wrap, anchor>
};
public static final Vocabulary VOCABULARY = new VocabularyImpl(_LITERAL_NAMES,
_SYMBOLIC_NAMES);

/**
 * @deprecated Use { @link #VOCABULARY } instead.
 */
@Deprecated
public static final String[] tokenNames;
static {
tokenNames = new String[_SYMBOLIC_NAMES.length];
for (int i = 0; i < tokenNames.length; i++) {
tokenNames[i] = VOCABULARY.getLiteralName(i);
if (tokenNames[i] == null) {
tokenNames[i] = VOCABULARY.getSymbolicName(i);
}

if (tokenNames[i] == null) {
tokenNames[i] = "\<INVALID>";
}
}
}

@Override
@Deprecated
public String[] getTokenNames() {
return tokenNames;
}

@Override

public Vocabulary getVocabulary() {
return VOCABULARY;
}
>>

dumpActions(recog, argFuncs, actionFuncs, sempredFuncs) ::= <<
<if(actionFuncs)>

```

```

@Override
public void action(RuleContext _localctx, int ruleIndex, int actionIndex) {
    switch (ruleIndex) {
        <recog.actionFuncs.values: {f|
    case <f.ruleIndex>:
        <f.name>_action((<f.ctxType>)_localctx, actionIndex);
        break;}; separator="\n">
    }
}
<actionFuncs.values; separator="\n">
<endif>
<if( sempredFuncs)>
@Override
public boolean sempred(RuleContext _localctx, int ruleIndex, int predIndex) {
    switch (ruleIndex) {
        <recog.sempredFuncs.values: {f|
    case <f.ruleIndex>:
        return <f.name>_sempred((<f.ctxType>)_localctx, predIndex);}; separator="\n">
    }
    return true;
}
<sempredFuncs.values; separator="\n">
<endif>
>>

parser_ctor(p) ::= <<
public <p.name>(TokenStream input) {
    super(input);
    _interp = new ParserATNSimulator(this,_ATN,_decisionToDFA,_sharedContextCache);
}
>>

/* This generates a private method since the actionIndex is generated, making an
* overriding implementation impossible to maintain.
*/
RuleActionFunction(r, actions) ::= <<
private void <r.name>_action(<r.ctxType> _localctx, int actionIndex) {
    switch (actionIndex) {
        <actions: {index|
    case <index>:
        <actions.(index)>
        break;}; separator="\n">
    }
}
>>

/* This generates a private method since the predIndex is generated, making an
* overriding implementation impossible to maintain.

```



```

*/
RuleSempredFunction(r, actions) ::= <<
private boolean <r.name>_sempred(<r.ctxType> _localctx, int predIndex) {
    switch (predIndex) {
        <actions: {index|
        case <index>:
            return <actions.(index)>;}; separator="\n">
        }
        return true;
    }
}
>>

RuleFunction(currentRule,args,code,locals,ruleCtx,altLabelCtxs,namedActions,finallyAction,postamble,exceptions)
::= <<

<ruleCtx>
<altLabelCtxs: {l | <altLabelCtxs.(l)>}; separator="\n">

<if(currentRule.modifiers)><currentRule.modifiers: {f | <f> }><else>public final <endif><currentRule.ctxType>
<currentRule.name><(<args; separator=", ">) throws RecognitionException {
    <currentRule.ctxType> _localctx = new <currentRule.ctxType>(_ctx, getState())<currentRule.args: {a | ,
    <a.name>}>>;
    enterRule(_localctx, <currentRule.startState>, RULE_<currentRule.name>);
    <namedActions.init>
    <locals; separator="\n">
    try {
    <if(currentRule.hasLookaheadBlock)>
        int _alt;
    <endif>
        <code>
        <postamble; separator="\n">
        <namedActions.after>
    }
    <if(exceptions)>
        <exceptions; separator="\n">
    <else>
        catch (RecognitionException re) {
            _localctx.exception = re;
            _errHandler.reportError(this, re);
            _errHandler.recover(this, re);
        }
    <endif>
    finally {
        <finallyAction>
        exitRule();
    }
    return _localctx;
}

```

>>

```
LeftRecursiveRuleFunction(currentRule,args,code,locals,ruleCtx,altLabelCtxs,  
namedActions,finallyAction,postamble) ::=
```

<<

```
<ruleCtx>
```

```
<altLabelCtxs:{l | <altLabelCtxs.l>}; separator="\n">
```

```
<if(currentRule.modifiers)><currentRule.modifiers:{f | <f> }><else>public final <endif><currentRule.ctxType>  
<currentRule.name><(args; separator=",">) throws RecognitionException {  
return <currentRule.name><(currentRule.args:{a | , <a.name>}>);  
}
```

```
private <currentRule.ctxType> <currentRule.name>(int _p<args:{a | , <a>}>) throws RecognitionException {
```

```
ParserRuleContext _parentctx = _ctx;
```

```
int _parentState = getState();
```

```
<currentRule.ctxType> _localctx = new <currentRule.ctxType>(_ctx, _parentState<currentRule.args:{a | ,  
<a.name>}>);
```

```
<currentRule.ctxType> _prevctx = _localctx;
```

```
int _startState = <currentRule.startState>;
```

```
enterRecursionRule(_localctx, <currentRule.startState>, RULE_<currentRule.name>, _p);
```

```
<namedActions.init>
```

```
<locals; separator="\n">
```

```
try {
```

```
<if(currentRule.hasLookaheadBlock)>
```

```
int _alt;
```

```
<endif>
```

```
<code>
```

```
<postamble; separator="\n">
```

```
<namedActions.after>
```

```
}
```

```
catch (RecognitionException re) {
```

```
_localctx.exception = re;
```

```
_errHandler.reportError(this, re);
```

```
_errHandler.recover(this, re);
```

```
}
```

```
finally {
```

```
<finallyAction>
```

```
unrollRecursionContexts(_parentctx);
```

```
}
```

```
return _localctx;
```

```
}
```

>>

```
CodeBlockForOuterMostAlt(currentOuterMostAltCodeBlock, locals, preamble, ops) ::= <<
```

```
<if(currentOuterMostAltCodeBlock.altLabel)>_localctx = new <currentOuterMostAltCodeBlock.altLabel;  
format="cap">Context(_localctx);<endif>
```

```

enterOuterAlt(_localctx, <currentOuterMostAltCodeBlock.alt.altNum>);
<CodeBlockForAlt(currentAltCodeBlock=currentOuterMostAltCodeBlock, ...)>
>>

```

```

CodeBlockForAlt(currentAltCodeBlock, locals, preamble, ops) ::= <<
{
<locals; separator="\n">
<preamble; separator="\n">
<ops; separator="\n">
}
>>

```

```

LL1AltBlock(choice, preamble, alts, error) ::= <<
setState(<choice.stateNumber>);
_errHandler.sync(this);
<if(choice.label)><labelref(choice.label)> = _input.LT(1);<endif>
<preamble; separator="\n">
switch (_input.LA(1)) {
<choice.altLook,alts:{look,alt| <cases(ttypes=look)>
<alt>
break;}; separator="\n">
default:
<error>
}
>>

```

```

LL1OptionalBlock(choice, alts, error) ::= <<
setState(<choice.stateNumber>);
_errHandler.sync(this);
switch (_input.LA(1)) {
<choice.altLook,alts:{look,alt| <cases(ttypes=look)>
<alt>
break;}; separator="\n">
default:
<error>
}
>>

```

```

LL1OptionalBlockSingleAlt(choice, expr, alts, preamble, error, followExpr) ::= <<
setState(<choice.stateNumber>);
_errHandler.sync(this);
<preamble; separator="\n">
if (<expr>) {
<alts; separator="\n">
}
<!else if ( !(<followExpr> ) <error!>
>>

```

```

LL1StarBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
  setState(<choice.stateNumber>);
  _errHandler.sync(this);
  <preamble; separator="\n">
  while (<loopExpr>) {
    <alts; separator="\n">
    setState(<choice.loopBackStateNumber>);
    _errHandler.sync(this);
    <iteration>
  }
>>

```

```

LL1PlusBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
  setState(<choice.blockStartStateNumber>); <! alt block decision !>
  _errHandler.sync(this);
  <preamble; separator="\n">
  do {
    <alts; separator="\n">
    setState(<choice.stateNumber>); <! loopback/exit decision !>
    _errHandler.sync(this);
    <iteration>
  } while ( <loopExpr> );
>>

```

```
// LL(*) stuff
```

```

AltBlock(choice, preamble, alts, error) ::= <<
  setState(<choice.stateNumber>);
  _errHandler.sync(this);
  <if(choice.label)><labelref(choice.label)> = _input.LT(1);<endif>
  <preamble; separator="\n">
  switch ( getInterpreter().adaptivePredict(_input,<choice.decision>,_ctx) ) {
  <alts:{ alt |
  case <i>:
    <alt>
    break;}; separator="\n">
  }
>>

```

```

OptionalBlock(choice, alts, error) ::= <<
  setState(<choice.stateNumber>);
  _errHandler.sync(this);
  switch ( getInterpreter().adaptivePredict(_input,<choice.decision>,_ctx) ) {
  <alts:{ alt |
  case <i><if(!choice.ast.greedy)>+1<endif>:
    <alt>
    break;}; separator="\n">
  }

```

>>

```
StarBlock(choice, alts, sync, iteration) ::= <<
setState(<choice.stateNumber>);
_errHandler.sync(this);
_alt = getInterpreter().adaptivePredict(_input,<choice.decision>,_ctx);
while ( _alt!=<choice.exitAlt> && _alt!=org.antlr.v4.runtime.atn.ATN.INVALID_ALT_NUMBER ) {
if ( _alt==1<if(!choice.ast.greedy)>+1<endif> ) {
<iteration>
<alts> <! should only be one !>
}
setState(<choice.loopBackStateNumber>);
_errHandler.sync(this);
_alt = getInterpreter().adaptivePredict(_input,<choice.decision>,_ctx);
}
>>
```

```
PlusBlock(choice, alts, error) ::= <<
setState(<choice.blockStartStateNumber>); <! alt block decision !>
_errHandler.sync(this);
_alt = 1<if(!choice.ast.greedy)>+1<endif>;
do {
switch ( _alt ) {
<alts:{alt|
case <i><if(!choice.ast.greedy)>+1<endif>:
<alt>
break;}; separator="\n">
default:
<error>
}
setState(<choice.loopBackStateNumber>); <! loopback/exit decision !>
_errHandler.sync(this);
_alt = getInterpreter().adaptivePredict(_input,<choice.decision>,_ctx);
} while ( _alt!=<choice.exitAlt> && _alt!=org.antlr.v4.runtime.atn.ATN.INVALID_ALT_NUMBER );
>>
```

```
Sync(s) ::= "sync(<s.expecting.name>);"
```

```
ThrowNoViableAlt(t) ::= "throw new NoViableAltException(this);"
```

```
TestSetInline(s) ::= <<
<s.bitsets:{bits | <if(rest(rest(bits.ttypes)))><bitsetBitfieldComparison(s, bits)><else><bitsetInlineComparison(s,
bits)><endif>}; separator=" || ">
>>
```

```
// Java language spec 15.19 - shift operators mask operands rather than overflow to 0... need range test
```

```
testShiftInRange(shiftAmount) ::= <<
```

```
((<shiftAmount>) & ~0x3f) == 0
```

```

>>

// produces smaller bytecode only when bits.ttypes contains more than two items
bitsetBitfieldComparison(s, bits) ::= <%
(<testShiftInRange({<offsetShift(s.varName, bits.shift)>})> && ((1L \<\< <offsetShift(s.varName, bits.shift)>) &
(<bits.ttypes:{ ttype | (1L \<\< <offsetShift(ttype, bits.shift)>)}; separator=" | ">)) != 0)
%>

isZero ::= [
"0":true,
default:false
]

offsetShift(shiftAmount, offset) ::= <%
<if(!isZero(offset))><shiftAmount> - <offset><else><shiftAmount><endif>
%>

// produces more efficient bytecode when bits.ttypes contains at most two items
bitsetInlineComparison(s, bits) ::= <%
<bits.ttypes:{ ttype | <s.varName>==<ttype>}; separator=" || ">
%>

cases(ttypes) ::= <<
<ttypes:{ t | case <t>:}; separator="\n">
>>

InvokeRule(r, argExprsChunks) ::= <<
setState(<r.stateNumber>);
<if(r.labels)><r.labels:{1 | <labelref(l)> =
}><endif><r.name><(<if(r.ast.options.p)><r.ast.options.p><if(argExprsChunks)><endif><endif><argExprsChunks>
);
>>

MatchToken(m) ::= <<
setState(<m.stateNumber>);
<if(m.labels)><m.labels:{1 | <labelref(l)> = }><endif>match(<m.name>);
>>

MatchSet(m, expr, capture) ::= "<CommonSetStuff(m, expr, capture, false)>"

MatchNotSet(m, expr, capture) ::= "<CommonSetStuff(m, expr, capture, true)>"

CommonSetStuff(m, expr, capture, invert) ::= <<
setState(<m.stateNumber>);
<if(m.labels)><m.labels:{1 | <labelref(l)> = }>>_input.LT(1);<endif>
<capture>
if ( <if(invert)><m.varName> \<= 0 || <else>!<endif>(<expr>)) {
<if(m.labels)><m.labels:{1 | <labelref(l)> = (Token)}><endif>_errHandler.recoverInline(this);

```

```

}
else {
if ( _input.LA(1)==Token.EOF ) matchedEOF = true;
_errHandler.reportMatch(this);
consume();
}
>>

Wildcard(w) ::= <<
setState(<w.stateNumber>);
<if(w.labels)><w.labels:{1 | <labelref(1)> = }><endif>matchWildcard();
>>

// ACTION STUFF

Action(a, foo, chunks) ::= "<chunks>"

ArgAction(a, chunks) ::= "<chunks>"

SemPred(p, chunks, failChunks) ::= <<
setState(<p.stateNumber>);
if (!<chunks>) throw new FailedPredicateException(this, <p.predicate><if(failChunks)>,
<failChunks><elseif(p.msg)>, <p.msg><endif>);
>>

ExceptionClause(e, catchArg, catchAction) ::= <<
catch (<catchArg>) {
<catchAction>
}
>>

// lexer actions are not associated with model objects

LexerSkipCommand() ::= "skip();"
LexerMoreCommand() ::= "more();"
LexerPopModeCommand() ::= "popMode();"

LexerTypeCommand(arg, grammar) ::= "_type = <arg>";
LexerChannelCommand(arg, grammar) ::= "_channel = <arg>";
LexerModeCommand(arg, grammar) ::= "_mode = <arg>";
LexerPushModeCommand(arg, grammar) ::= "pushMode(<arg>);"

ActionText(t) ::= "<t.text>"
ActionTemplate(t) ::= "<t.st>"
ArgRef(a) ::= "_localctx.<a.name>"
LocalRef(a) ::= "_localctx.<a.name>"
RetValRef(a) ::= "_localctx.<a.name>"
QRetValRef(a) ::= "<ctx(a)>.<a.dict>.<a.name>"

```

```

/** How to translate $tokenLabel */
TokenRef(t) ::= "<ctx(t)>.<t.name>"
LabelRef(t) ::= "<ctx(t)>.<t.name>"
ListLabelRef(t) ::= "<ctx(t)>.<ListLabelName(t.name)>"
SetAttr(s,rhsChunks) ::= "<ctx(s)>.<s.name> = <rhsChunks>";

TokenLabelType() ::= "<file.TokenLabelType; null={Token}>"
InputSymbolType() ::= "<file.InputSymbolType; null={Token}>"

TokenPropertyRef_text(t) ::= "<ctx(t)>.<t.label>!=null?<ctx(t)>.<t.label>.getText():null)"
TokenPropertyRef_type(t) ::= "<ctx(t)>.<t.label>!=null?<ctx(t)>.<t.label>.getType():0)"
TokenPropertyRef_line(t) ::= "<ctx(t)>.<t.label>!=null?<ctx(t)>.<t.label>.getLine():0)"
TokenPropertyRef_pos(t) ::= "<ctx(t)>.<t.label>!=null?<ctx(t)>.<t.label>.getCharPositionInLine():0)"
TokenPropertyRef_channel(t) ::= "<ctx(t)>.<t.label>!=null?<ctx(t)>.<t.label>.getChannel():0)"
TokenPropertyRef_index(t) ::= "<ctx(t)>.<t.label>!=null?<ctx(t)>.<t.label>.getTokenIndex():0)"
TokenPropertyRef_int(t) ::= "<ctx(t)>.<t.label>!=null?Integer.valueOf(<ctx(t)>.<t.label>.getText():0)"

RulePropertyRef_start(r) ::= "<ctx(r)>.<r.label>!=null?(<ctx(r)>.<r.label>.start):null)"
RulePropertyRef_stop(r) ::= "<ctx(r)>.<r.label>!=null?(<ctx(r)>.<r.label>.stop):null)"
RulePropertyRef_text(r) ::=
"<ctx(r)>.<r.label>!=null?_input.getText(<ctx(r)>.<r.label>.start,<ctx(r)>.<r.label>.stop):null)"
RulePropertyRef_ctx(r) ::= "<ctx(r)>.<r.label>"
RulePropertyRef_parser(r) ::= "this"

ThisRulePropertyRef_start(r) ::= "_localctx.start"
ThisRulePropertyRef_stop(r) ::= "_localctx.stop"
ThisRulePropertyRef_text(r) ::= "_input.getText(_localctx.start, _input.LT(-1))"
ThisRulePropertyRef_ctx(r) ::= "_localctx"
ThisRulePropertyRef_parser(r) ::= "this"

NonLocalAttrRef(s) ::= "(<<s.ruleName; format=\"cap\">Context)getInvokingContext(<s.ruleIndex>)).<s.name>"
SetNonLocalAttr(s, rhsChunks) ::=
"(<<s.ruleName; format=\"cap\">Context)getInvokingContext(<s.ruleIndex>)).<s.name> = <rhsChunks>";

AddToLabelList(a) ::= "<ctx(a.label)>.<a.listName>.add(<labelref(a.label)>);"

TokenDecl(t) ::= "<TokenLabelType() <t.name>"
TokenTypeDecl(t) ::= "int <t.name>";
TokenListDecl(t) ::= "List<Token> <t.name> = new ArrayList<Token>()"
RuleContextDecl(r) ::= "<r.ctxName> <r.name>"
RuleContextListDecl(rdecl) ::= "List<<rdecl.ctxName>> <rdecl.name> = new ArrayList<<rdecl.ctxName>>()"

ContextTokenGetterDecl(t) ::=
"public TerminalNode <t.name>() { return getToken(<parser.name>.<t.name>, 0); }"
ContextTokenListGetterDecl(t) ::=
"public List<TerminalNode> <t.name>() { return getTokens(<parser.name>.<t.name>); }"
ContextTokenListIndexedGetterDecl(t) ::= <<
public TerminalNode <t.name>(int i) {

```



```

    return getToken(<parser.name>.<t.name>, i);
}
>>
ContextRuleGetterDecl(r) ::= <<
public <r.ctxName> <r.name>() {
    return getRuleContext(<r.ctxName>.class,0);
}
>>
ContextRuleListGetterDecl(r) ::= <<
public List<<<r.ctxName>> <r.name>() {
    return getRuleContexts(<r.ctxName>.class);
}
>>
ContextRuleListIndexedGetterDecl(r) ::= <<
public <r.ctxName> <r.name>(int i) {
    return getRuleContext(<r.ctxName>.class,i);
}
>>

LexerRuleContext() ::= "RuleContext"

/** The rule context name is the rule followed by a suffix; e.g.,
 * r becomes rContext.
 */
RuleContextNameSuffix() ::= "Context"

ImplicitTokenLabel(tokenName) ::= "<tokenName>"
ImplicitRuleLabel(ruleName) ::= "<ruleName>"
ImplicitSetLabel(id) ::= "_tset<id>"
ListLabelName(label) ::= "<label>"

CaptureNextToken(d) ::= "<d.varName> = _input.LT(1);"
CaptureNextTokenType(d) ::= "<d.varName> = _input.LA(1);"

StructDecl(struct,ctorAttrs,attrs,getters,dispatchMethods,interfaces,extensionMembers)
::= <<
public static class <struct.name> extends
<if(contextSuperClass)><contextSuperClass><else>ParserRuleContext<endif><if(interfaces)> implements
<interfaces; separator=", "><endif> {
    <attrs:{a | public <a>;}; separator="\n">
    <getters:{g | <g>;}; separator="\n">
    <if(ctorAttrs)>public <struct.name>(ParserRuleContext parent, int invokingState) { super(parent, invokingState);
    }<endif>
    public <struct.name>(ParserRuleContext parent, int invokingState<ctorAttrs:{a | , <a>>}) {
        super(parent, invokingState);
        <struct.ctorAttrs:{a | this.<a.name> = <a.name>;}; separator="\n">
    }
    @Override public int getRuleIndex() { return RULE_<struct.derivedFromName>; }
}

```

```

<if(struct.provideCopyFrom)> <! don't need copy unless we have subclasses !>
public <struct.name>() { }
public void copyFrom(<struct.name> ctx) {
    super.copyFrom(ctx);
    <struct.attrs:{a | this.<a.name> = ctx.<a.name>;}; separator="\n">
}
<endif>
<dispatchMethods; separator="\n">
<extensionMembers; separator="\n">
}
>>

```

```

AltLabelStructDecl(struct,attrs, getters,dispatchMethods) ::= <<
public static class <struct.name> extends <currentRule.name; format="cap">Context {
    <attrs:{a | public <a>;}; separator="\n">
    <getters:{g | <g>;}; separator="\n">
    public <struct.name>(<currentRule.name; format="cap">Context ctx) { copyFrom(ctx); }
    <dispatchMethods; separator="\n">
}
>>

```

```

ListenerDispatchMethod(method) ::= <<
@Override
public void <if(method.isEnter)>enter<else>exit<endif>Rule(ParseTreeListener listener) {
    if ( listener instanceof <parser.grammarName>Listener )
        ((<parser.grammarName>Listener)listener).<if(method.isEnter)>enter<else>exit<endif><struct.derivedFromName;
        format="cap">(this);
}
>>

```

```

VisitorDispatchMethod(method) ::= <<
@Override
public <T> T accept(ParseTreeVisitor<? extends T> visitor) {
    if ( visitor instanceof <parser.grammarName>Visitor ) return ((<parser.grammarName>Visitor<? extends
    T>)visitor).visit<struct.derivedFromName; format="cap">(this);
    else return visitor.visitChildren(this);
}
>>

```

```

AttributeDecl(d) ::= "<d.type> <d.name><if(d.initValue)> = <d.initValue><endif>"

```

```

/** If we don't know location of label def x, use this template */
labelref(x) ::= "<if(!x.isLocal)>(<x.ctx.name>)_localctx.<endif><x.name>"

```

```

/** For any action chunk, what is correctly-typed context struct ptr? */
ctx(actionChunk) ::= "(<actionChunk.ctx.name>)_localctx"

```

```

// used for left-recursive rules

```

```

recRuleAltPredicate(ruleName,opPrec) ::= "precpred(_ctx, <opPrec>)"
recRuleSetReturnAction(src,name) ::= "$<name>=<src>.<name>;"
recRuleSetStopToken() ::= "_ctx.stop = _input.LT(-1);"

```

```

recRuleAltStartAction(ruleName, ctxName, label, isListLabel) ::= <<
  _localctx = new <ctxName>Context(_parentctx, _parentState);
  <if(label)>
  <if(isListLabel)>
    _localctx.<label>.add(_prevctx);
  <else>
    _localctx.<label> = _prevctx;
  <endif>
  <endif>
  <if(label)>_localctx.<label> = _prevctx;<endif>
  pushNewRecursionContext(_localctx, _startState, RULE_<ruleName>);
>>

```

```

recRuleLabeledAltStartAction(ruleName, currentAltLabel, label, isListLabel) ::= <<
  _localctx = new <currentAltLabel; format="cap">Context(new <ruleName; format="cap">Context(_parentctx,
  _parentState));
  <if(label)>
  <if(isListLabel)>
    ((<currentAltLabel; format="cap">Context)_localctx).<label>.add(_prevctx);
  <else>
    ((<currentAltLabel; format="cap">Context)_localctx).<label> = _prevctx;
  <endif>
  <endif>
  pushNewRecursionContext(_localctx, _startState, RULE_<ruleName>);
>>

```

```

recRuleReplaceContext(ctxName) ::= <<
  _localctx = new <ctxName>Context(_localctx);
  _ctx = _localctx;
  _prevctx = _localctx;
>>

```

```

recRuleSetPrevCtx() ::= <<
  if ( _parseListeners!=null ) triggerExitRuleEvent();
  _prevctx = _localctx;
>>

```

```

LexerFile(lexerFile, lexer, namedActions) ::= <<
  <fileHeader(lexerFile.grammarFileName, lexerFile.ANTLRVersion)>
  <if(lexerFile.genPackage)>
    package <lexerFile.genPackage>;
  <endif>
  <namedActions.header>

```

```

import org.antlr.v4.runtime.Lexer;
import org.antlr.v4.runtime.CharStream;
import org.antlr.v4.runtime.Token;
import org.antlr.v4.runtime.TokenStream;
import org.antlr.v4.runtime.*;
import org.antlr.v4.runtime.atn.*;
import org.antlr.v4.runtime.dfa.DFA;
import org.antlr.v4.runtime.misc.*;

<lexer>
>>

Lexer(lexer, atn, actionFuncs, sempredFuncs, superClass) ::= <<
@SuppressWarnings({"all", "warnings", "unchecked", "unused", "cast"})
public class <lexer.name> extends <superClass; null="Lexer"> {
    static { RuntimeMetaData.checkVersion("<lexerFile.ANTLRVersion>", RuntimeMetaData.VERSION); }

    protected static final DFA[] _decisionToDFA;
    protected static final PredictionContextCache _sharedContextCache =
        new PredictionContextCache();
    public static final int
        <lexer.tokens:{k | <k>=<lexer.tokens.(k)>}; separator=", ", wrap, anchor>;
    <if(lexer.channels)>
    public static final int
        <lexer.channels:{k | <k>=<lexer.channels.(k)>}; separator=", ", wrap, anchor>;
    <endif>
    <rest(lexer.modes):{m| public static final int <m> = <i>;}; separator="\n">
    public static String[] modeNames = {
        <lexer.modes:{m| "<m>"}; separator=", ", wrap, anchor>
    };

    public static final String[] ruleNames = {
        <lexer.ruleNames:{r | "<r>"}; separator=", ", wrap, anchor>
    };

    <vocabulary(lexer.literalNames, lexer.symbolicNames)>

    <namedActions.members>

    public <lexer.name>(CharStream input) {
        super(input);
        _interp = new LexerATNSimulator(this, _ATN, _decisionToDFA, _sharedContextCache);
    }

    @Override
    public String getGrammarFileName() { return "<lexer.grammarFileName>"; }

    @Override

```

```

public String[] getRuleNames() { return ruleNames; }

@Override
public String getSerializedATN() { return _serializedATN; }

@Override
public String[] getModeNames() { return modeNames; }

@Override
public ATN getATN() { return _ATN; }

<dumpActions(lexer, "", actionFuncs, sempredFuncs)>
<atn>
}
>>

SerializedATN(model) ::= <<
<if(rest(model.segments))>
<! requires segmented representation !>
private static final int _serializedATNSegments = <length(model.segments)>;
<model.segments:{segment|private static final String _serializedATNSegment<i0> =
"<segment; wrap={ "+<\n><\t>" }>";}; separator="\n">
public static final String _serializedATN = Utils.join(
new String[] {
<model.segments:{segment | _serializedATNSegment<i0>}; separator=",\n">
},
""
);
<else>
<! only one segment, can be inlined !>
public static final String _serializedATN =
"<model.serialized; wrap={ "+<\n><\t>" }>";
<endif>
public static final ATN _ATN =
new ATNDeserializer().deserialize(_serializedATN.toCharArray());
static {
_decisionToDFA = new DFA[_ATN.getNumberOfDecisions()];
for (int i = 0; i < _ATN.getNumberOfDecisions(); i++) {
_decisionToDFA[i] = new DFA(_ATN.getDecisionState(i), i);
}
<! org.antlr.v4.tool.DOTGenerator dot = new org.antlr.v4.tool.DOTGenerator(null);!>
<! System.out.println(dot.getDOT(_ATN.decisionToState.get(0), ruleNames, false));!>
<! System.out.println(dot.getDOT(_ATN.ruleToStartState[2], ruleNames, false));!>
}
>>

/** Using a type to init value map, try to init a type; if not in table
* must be an object, default value is "null".

```

```
*/  
initValue(typeName) ::= <<  
<javaTypeInitMap.(typeName)>  
>>
```

```
codeFileExtension() ::= ".java"
```

Found in path(s):

```
* /opt/cola/permits/1166873170_1621514800.65/0/antlr4-4-6-sources-1-  
jar/org/antlr/v4/tool/templates/codegen/Java/Java.stg
```

No license file was found, but licenses were detected in source scan.

```
/*  
* [The "BSD license"]  
* Copyright (c) 2012-2016 Terence Parr  
* Copyright (c) 2012-2016 Sam Harwell  
* Copyright (c) 2014 Eric Vergnaud  
* All rights reserved.  
*  
* Redistribution and use in source and binary forms, with or without  
* modification, are permitted provided that the following conditions  
* are met:  
*  
* 1. Redistributions of source code must retain the above copyright  
* notice, this list of conditions and the following disclaimer.  
* 2. Redistributions in binary form must reproduce the above copyright  
* notice, this list of conditions and the following disclaimer in the  
* documentation and/or other materials provided with the distribution.  
* 3. The name of the author may not be used to endorse or promote products  
* derived from this software without specific prior written permission.  
*  
* THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS" AND ANY EXPRESS OR  
* IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES  
* OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.  
* IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,  
* INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT  
* NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,  
* DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY  
* THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT  
* (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF  
* THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.  
*/
```

```
/** ANTLR tool checks output templates are compatible with tool code generation.
```

```
* For now, a simple string match used on x.y of x.y.z scheme.
```

```
* Must match Tool.VERSION during load to templates.
```

```
*
```

```
* REQUIRED.
```

```

*/

pythonTypeInitMap ::= [
  "bool":"False",
  "int":"0",
  "float":"0.0",
  "str": "",
  default:"None" // anything other than a primitive type is an object
]

// args must be <object-model-object>, <fields-resulting-in-STs>

ParserFile(file, parser, namedActions, contextSuperClass) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
# encoding: utf-8
from antlr4 import *
from io import StringIO

<namedActions.header>
<parser>

>>

ListenerFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
from antlr4 import *
if __name__ is not None and "." in __name__:
    from <file.parserName> import <file.parserName>
else:
    from <file.parserName> import <file.parserName>
<header>

# This class defines a complete listener for a parse tree produced by <file.parserName>.
class <file.grammarName>Listener(ParseTreeListener):

    <file.listenerNames>: { lname |
# Enter a parse tree produced by <file.parserName>#<lname>.
def enter<lname>(self, ctx:<file.parserName>.<lname>Context):
    pass

# Exit a parse tree produced by <file.parserName>#<lname>.
def exit<lname>(self, ctx:<file.parserName>.<lname>Context):
    pass

}; separator="\n"

>>

```

```

VisitorFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
from antlr4 import *
if __name__ is not None and "." in __name__:
    from <file.parserName> import <file.parserName>
else:
    from <file.parserName> import <file.parserName>
<header>

# This class defines a complete generic visitor for a parse tree produced by <file.parserName>.

class <file.grammarName>Visitor(ParseTreeVisitor):

    <file.visitorNames:{lname |
# Visit a parse tree produced by <file.parserName>#<lname>.
def visit<lname; format="cap">(self, ctx:<file.parserName>.<lname; format="cap">Context):
    return self.visitChildren(ctx)

}; separator="\n">

del <file.parserName>
>>

fileHeader(grammarFileName, ANTLRVersion) ::= <<
# Generated from <grammarFileName> by ANTLR <ANTLRVersion>
>>

Parser(parser, funcs, atn, sempredFuncs, superClass) ::= <<
<Parser_(ctor="parser_ctor", ...)>
>>

Parser_(parser, funcs, atn, sempredFuncs, ctor, superClass) ::= <<
<if(superClass)>
from <superClass> import <superClass>

<endif>
<atn>

class <parser.name> ( <if(superClass)><superClass><else>Parser<endif> ):

    grammarFileName = "<parser.grammarFileName>"

    atn = ATNDeserializer().deserialize(serializedATN())

    decisionsToDFA = [ DFA(ds, i) for i, ds in enumerate(atn.decisionToState) ]

```



```

sharedContextCache = PredictionContextCache()

literalNames = [ <parser.literalNames:{t | <t>}; null="\\"<INVALID>\\"", separator=", ", wrap, anchor> ]

symbolicNames = [ <parser.symbolicNames:{t | <t>}; null="\\"<INVALID>\\"", separator=", ", wrap, anchor> ]

<parser.rules:{r | RULE_<r.name> = <r.index>}; separator="\n", wrap, anchor>

ruleNames = [ <parser.ruleNames:{r | "<r>"}; separator=", ", wrap, anchor> ]

EOF = <TokenLabelType().EOF
<if(parser.tokens)>
<parser.tokens:{k | <k>=<parser.tokens.(k)>}; separator="\n", wrap, anchor>
<endif>

<parser:(ctor())>

<namedActions.members>

<funcs; separator="\n">

<if(sembredFuncs)>
def sembred(self, localctx:RuleContext, ruleIndex:int, predIndex:int):
    if self._predicates == None:
        self._predicates = dict()
<parser.sembredFuncs.values:{ f |
    self._predicates[<f.ruleIndex>] = self.<f.name>_sembred }; separator="\n    ">
    pred = self._predicates.get(ruleIndex, None)
    if pred is None:
        raise Exception("No predicate with index:" + str(ruleIndex))
    else:
        return pred(localctx, predIndex)

<sembredFuncs.values; separator="\n">
<endif>

>>

dumpActions(recog, argFuncs, actionFuncs, sembredFuncs) ::= <<
<if(actionFuncs)>
def action(self, localctx:RuleContext, ruleIndex:int, actionIndex:int):
    if self._actions is None:
        actions = dict()
<recog.actionFuncs.values:{ f |
    actions[<f.ruleIndex>] = self.<f.name>_action }; separator="\n">

```

```

self._actions = actions
action = self._actions.get(ruleIndex, None)
if action is not None:
    action(localctx, actionIndex)
else:
    raise Exception("No registered action for:" + str(ruleIndex))

<actionFuncs.values; separator="\n">

<endif>
<if(sempredFuncs)>
def sempred(self, localctx:RuleContext, ruleIndex:int, predIndex:int):
    if self._predicates is None:
        preds = dict()
    <recog.sempredFuncs.values:{f}
        preds[<f.ruleIndex>] = self.<f.name>_sempred}; separator="\n">
    self._predicates = preds
    pred = self._predicates.get(ruleIndex, None)
    if pred is not None:
        return pred(localctx, predIndex)
    else:
        raise Exception("No registered predicate for:" + str(ruleIndex))

<sempredFuncs.values; separator="\n">
<endif>
>>

parser_ctor(p) ::= <<
def __init__(self, input:TokenStream):
    super().__init__(input)
    self.checkVersion("<file.ANTLRVersion>")
    self._interp = ParserATNSimulator(self, self.atn, self.decisionsToDFA, self.sharedContextCache)
    self._predicates = None

>>

/* This generates a private method since the actionIndex is generated, making an
* overriding implementation impossible to maintain.
*/
RuleActionFunction(r, actions) ::= <<

def <r.name>_action(self, localctx:<r.ctxType> , actionIndex:int):
<actions:{index|
<if(first(actions))>
    if actionIndex == <index>:
        <actions.(index)>
<elseif(rest(actions))>
    elif actionIndex == <index>:

```

```

    <actions.(index)>
<endif> }; separator="\n">
>>

/* This generates a private method since the predIndex is generated, making an
* overriding implementation impossible to maintain.
*/
RuleSempredFunction(r, actions) ::= <<
def <r.name>_sempred(self, localctx:<r.ctxType>, predIndex:int):
    <actions:{index|
<if(first(actions))>
    if predIndex == <index>:
        return <actions.(index)>
<elseif(rest(actions))>
    elif predIndex == <index>:
        return <actions.(index)>
<endif> }; separator="\n">

>>

RuleFunction(currentRule,args,code,locals,ruleCtx,altLabelCtxs,namedActions,finallyAction,postamble,exceptions)
::= <<

<ruleCtx>

<altLabelCtxs:{l | <altLabelCtxs.(l)>}; separator="\n">

def <currentRule.name>(self<currentRule.args:{a | , <a.name><if(a.type)>:<a.type><endif> }>):

    localctx = <parser.name>.<currentRule.ctxType>(self, self._ctx, self.state<currentRule.args:{a | , <a.name> }>)
    self.enterRule(localctx, <currentRule.startState>, self.RULE_<currentRule.name>)
    <namedActions.init>
    <locals; separator="\n">
    try:
        <code>
        <postamble; separator="\n">
        <namedActions.after>
    <if(exceptions)>
    <exceptions; separator="\n">
    <else>
    except RecognitionException as re:
        localctx.exception = re
        self._errHandler.reportError(self, re)
        self._errHandler.recover(self, re)
    <endif>
    finally:
        <finallyAction>
        self.exitRule()

```

```

return localctx

>>

LeftRecursiveRuleFunction(currentRule,args,code,locals,ruleCtx,altLabelCtxs,
namedActions,finallyAction,postamble) ::=
<<

<ruleCtx>
<altLabelCtxs:{l | <altLabelCtxs.(l)>} ; separator="\n">

def <currentRule.name>(self, _p:int=0<if(currentRule.args)>, <args:{ a | , <a>}><endif>):
    _parentctx = self._ctx
    _parentState = self.state
    localctx = <parser.name>.<currentRule.ctxType>(self, self._ctx, _parentState<args:{ a | , <a.name>}>)
    _prevctx = localctx
    _startState = <currentRule.startState>
    self.enterRecursionRule(localctx, <currentRule.startState>, self.RULE_<currentRule.name>, _p)
    <namedActions.init>
    <locals; separator="\n">
    try:
        <code>
        <postamble; separator="\n">
        <namedActions.after>
    except RecognitionException as re:
        localctx.exception = re
        self._errHandler.reportError(self, re)
        self._errHandler.recover(self, re)
    finally:
        <finallyAction>
        self.unrollRecursionContexts(_parentctx)
    return localctx

>>

CodeBlockForOuterMostAlt(currentOuterMostAltCodeBlock, locals, preamble, ops) ::= <<
<if(currentOuterMostAltCodeBlock.altLabel)>localctx = <parser.name>.<currentOuterMostAltCodeBlock.altLabel;
format="cap">Context(self, localctx)<endif>
self.enterOuterAlt(localctx, <currentOuterMostAltCodeBlock.alt.altNum>)
<CodeBlockForAlt(currentAltCodeBlock=currentOuterMostAltCodeBlock, ...)>
>>

CodeBlockForAlt(currentAltCodeBlock, locals, preamble, ops) ::= <<
<locals; separator="\n">
<preamble; separator="\n">
<ops; separator="\n">
>>

```

```

LL1AltBlock(choice, preamble, alts, error) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
<if(choice.label)><labelref(choice.label)> = _input.LT(1)<endif>
<preamble; separator="\n">
token = self._input.LA(1)
<choice.altLook,alts:{look,alt| <cases(ttypes=look)>
  <alt>
  pass }; separator="\n">
else:
  <error>

>>

```

```

LL1OptionalBlock(choice, alts, error) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
token = self._input.LA(1)
<choice.altLook,alts:{look,alt| <cases(ttypes=look)>
  <alt>
  pass }; separator="\n">
else:
  <error>

>>

```

```

LL1OptionalBlockSingleAlt(choice, expr, alts, preamble, error, followExpr) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
<preamble; separator="\n">
if <expr>:
  <alts; separator="\n">

<!else if ( !(<followExpr> ) ) <error>!>

>>

```

```

LL1StarBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
<preamble; separator="\n">
while <loopExpr>:
  <alts; separator="\n">
  self.state = <choice.loopBackStateNumber>
  self._errHandler.sync(self)
  <iteration>

>>

```

```

LL1PlusBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
self.state = <choice.blockStartStateNumber> <! alt block decision !>
self._errHandler.sync(self)
<preamble; separator="\n">
while True:
    <alts; separator="\n">
    self.state = <choice.stateNumber> <! loopback/exit decision !>
    self._errHandler.sync(self)
    <iteration>
    if not (<loopExpr>):
        break
>>

```

```
// LL(*) stuff
```

```

AltBlock(choice, preamble, alts, error) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
<if(choice.label)><labelref(choice.label)> = _input.LT(1)<endif>
<preamble; separator="\n">
la_ = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)
<alts:{ alt |
if la_ == <i>:
    <alt>
    pass
}; separator="\nel">
>>

```

```

OptionalBlock(choice, alts, error) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
la_ = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)
<alts:{ alt |
if la_ == <i><if(!choice.ast.greedy)>+1<endif>:
    <alt>
}; separator="\nel">
>>

```

```

StarBlock(choice, alts, sync, iteration) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
_alt = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)
while _alt!=<choice.exitAlt> and _alt!=ATN.INVALID_ALT_NUMBER:
    if _alt==1<if(!choice.ast.greedy)>+1<endif>:
        <iteration>

```

```

    <alts> <! should only be one !>
    self.state = <choice.loopBackStateNumber>
    self._errHandler.sync(self)
    _alt = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)

>>

PlusBlock(choice, alts, error) ::= <<
self.state = <choice.blockStartStateNumber> <! alt block decision !>
self._errHandler.sync(self)
_alt = 1<if(!choice.ast.greedy)>+1<endif>
while _alt!=<choice.exitAlt> and _alt!=ATN.INVALID_ALT_NUMBER:
    <alts:{alt|
if _alt == <i><if(!choice.ast.greedy)>+1<endif>:
    <alt>
}; separator="\n"|>
    else:
        <error>
    self.state = <choice.loopBackStateNumber> <! loopback/exit decision !>
    self._errHandler.sync(self)
    _alt = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)

>>

Sync(s) ::= "sync(<s.expecting.name>)"

ThrowNoViableAlt(t) ::= "raise NoViableAltException(self)"

TestSetInline(s) ::= <<
<s.bitsets:{bits | <if(rest(rest(bits.ttypes)))><bitsetBitfieldComparison(s, bits)><else><bitsetInlineComparison(s,
bits)><endif>}; separator=" or ">
>>

// Java language spec 15.19 - shift operators mask operands rather than overflow to 0... need range test
testShiftInRange(shiftAmount) ::= <<
((<shiftAmount>) & ~0x3f) == 0
>>

// produces smaller bytecode only when bits.ttypes contains more than two items
bitsetBitfieldComparison(s, bits) ::= <%
(<testShiftInRange({<offsetShiftVar(s.varName, bits.shift)>})> and ((1 \<< <offsetShiftVar(s.varName,
bits.shift)>) & (<bits.ttypes:{ttype | (1 \<< <offsetShiftType(ttype, bits.shift)>)}); separator=" | ">)) != 0)
%>

isZero ::= [
"0":true,
default:false
]

```

```

offsetShiftVar(shiftAmount, offset) ::= <%
<if(!isZero.(offset))><shiftAmount> - <offset><else><shiftAmount><endif>
%>

offsetShiftType(shiftAmount, offset) ::= <%
<if(!isZero.(offset))><parser.name>.<shiftAmount> - <offset><else><parser.name>.<shiftAmount><endif>
%>

// produces more efficient bytecode when bits.ttypes contains at most two items
bitsetInlineComparison(s, bits) ::= <%
<bits.ttypes: { ttype | <s.varName>==<parser.name>.<ttype> }; separator=" or ">
%>

cases(ttypes) ::= <<
if token in [<ttypes: { t | <parser.name>.<t> }; separator=", ">]:
>>

InvokeRule(r, argExprsChunks) ::= <<
self.state = <r.stateNumber>
<if(r.labels)><r.labels: {1 | <labelref(l)> =
}><endif>self.<r.name><(if(r.ast.options.p)><r.ast.options.p><if(argExprsChunks)>,<endif><endif><argExprsChu
nks>)
>>

MatchToken(m) ::= <<
self.state = <m.stateNumber>
<if(m.labels)><m.labels: {1 | <labelref(l)> = }><endif>self.match(<parser.name>.<m.name>)
>>

MatchSet(m, expr, capture) ::= "<CommonSetStuff(m, expr, capture, false)>"

MatchNotSet(m, expr, capture) ::= "<CommonSetStuff(m, expr, capture, true)>"

CommonSetStuff(m, expr, capture, invert) ::= <<
self.state = <m.stateNumber>
<if(m.labels)><m.labels: {1 | <labelref(l)> = }>self._input.LT(1)<endif>
<capture>
<if(invert)>if <m.varName> \<= 0 or <expr><else>if not(<expr><endif>:
<if(m.labels)><m.labels: {1 | <labelref(l)> = }><else> <endif>self._errHandler.recoverInline(self)
else:
self._errHandler.reportMatch(self)
self.consume()
>>

Wildcard(w) ::= <<
self.state = <w.stateNumber>
<if(w.labels)><w.labels: {1 | <labelref(l)> = }><endif>self.matchWildcard()

```



```

>>

// ACTION STUFF

Action(a, foo, chunks) ::= "<chunks>"

ArgAction(a, chunks) ::= "<chunks>"

SemPred(p, chunks, failChunks) ::= <<
self.state = <p.stateNumber>
if not <chunks>:
    from antlr4.error.Errors import FailedPredicateException
    raise FailedPredicateException(self, <p.predicate><if(failChunks)>, <failChunks><elseif(p.msg)>,
<p.msg><endif>)
>>

ExceptionClause(e, catchArg, catchAction) ::= <<
catch (<catchArg>) {
    <catchAction>
}
>>

// lexer actions are not associated with model objects

LexerSkipCommand() ::= "skip()"
LexerMoreCommand() ::= "more()"
LexerPopModeCommand() ::= "popMode()"

LexerTypeCommand(arg, grammar)    ::= "_type = <arg>"
LexerChannelCommand(arg, grammar) ::= "_channel = <arg>"
LexerModeCommand(arg, grammar)    ::= "_mode = <arg>"
LexerPushModeCommand(arg, grammar) ::= "pushMode(<arg>)"

ActionText(t) ::= "<t.text>"
ActionTemplate(t) ::= "<t.st>"
ArgRef(a) ::= "localctx.<a.name>"
LocalRef(a) ::= "localctx.<a.name>"
RetValRef(a) ::= "localctx.<a.name>"
QRetValRef(a) ::= "<ctx(a)>.<a.dict>.<a.name>"
/** How to translate $tokenLabel */
TokenRef(t) ::= "<ctx(t)>.<t.name>"
LabelRef(t) ::= "<ctx(t)>.<t.name>"
ListLabelRef(t) ::= "<ctx(t)>.<ListLabelName(t.name)>"
SetAttr(s,rhsChunks) ::= "<ctx(s)>.<s.name> = <rhsChunks>"

TokenLabelType() ::= "<file.TokenLabelType; null={Token}>"
InputSymbolType() ::= "<file.InputSymbolType; null={Token}>"

```

```

TokenPropertyRef_text(t) ::= "(None if <ctx(t)>.<t.label> is None else <ctx(t)>.<t.label>.text)"
TokenPropertyRef_type(t) ::= "(0 if <ctx(t)>.<t.label> is None else <ctx(t)>.<t.label>.type()"
TokenPropertyRef_line(t) ::= "(0 if <ctx(t)>.<t.label> is None else <ctx(t)>.<t.label>.line)"
TokenPropertyRef_pos(t) ::= "(0 if <ctx(t)>.<t.label> is None else <ctx(t)>.<t.label>.column)"
TokenPropertyRef_channel(t) ::= "(0 if (<ctx(t)>.<t.label> is None else <ctx(t)>.<t.label>.channel)"
TokenPropertyRef_index(t) ::= "(0 if <ctx(t)>.<t.label> is None else <ctx(t)>.<t.label>.tokenIndex)"
TokenPropertyRef_int(t) ::= "(0 if <ctx(t)>.<t.label> is None else int(<ctx(t)>.<t.label>.text))"

```

```

RulePropertyRef_start(r) ::= "(None if <ctx(r)>.<r.label> is None else <ctx(r)>.<r.label>.start)"
RulePropertyRef_stop(r) ::= "(None if <ctx(r)>.<r.label> is None else <ctx(r)>.<r.label>.stop)"
RulePropertyRef_text(r) ::= "(None if <ctx(r)>.<r.label> is None else
self._input.getText((<ctx(r)>.<r.label>.start,<ctx(r)>.<r.label>.stop)))"
RulePropertyRef_ctx(r) ::= "<ctx(r)>.<r.label>"
RulePropertyRef_parser(r) ::= "self"

```

```

ThisRulePropertyRef_start(r) ::= "localctx.start"
ThisRulePropertyRef_stop(r) ::= "localctx.stop"
ThisRulePropertyRef_text(r) ::= "self._input.getText((localctx.start, self._input.LT(-1)))"
ThisRulePropertyRef_ctx(r) ::= "localctx"
ThisRulePropertyRef_parser(r) ::= "self"

```

```

NonLocalAttrRef(s) ::= "getInvokingContext(<s.ruleIndex>).<s.name>"
SetNonLocalAttr(s, rhsChunks) ::= "getInvokingContext(<s.ruleIndex>).<s.name> = <rhsChunks>"

```

```

AddToLabelList(a) ::= "<ctx(a.label)>.<a.listName>.append(<labelref(a.label)>)"

```

```

TokenDecl(t) ::= "self.<t.name> = None # <TokenLabelType()>"
TokenTypeDecl(t) ::= "self.<t.name> = 0 # <TokenLabelType()> type"
TokenListDecl(t) ::= "self.<t.name> = list() # of <TokenLabelType()>s"
RuleContextDecl(r) ::= "self.<r.name> = None # <r.ctxName>"
RuleContextListDecl(rdecl) ::= "self.<rdecl.name> = list() # of <rdecl.ctxName>s"

```

```

ContextTokenGetterDecl(t) ::= <<
def <t.name>(self):
    return self.getToken(<parser.name>.<t.name>, 0)
>>

```

```

// should never be called
ContextTokenListGetterDecl(t) ::= <<
def <t.name>_list(self):
    return self.getTokens(<parser.name>.<t.name>)
>>

```

```

ContextTokenListIndexedGetterDecl(t) ::= <<
def <t.name>(self, i:int=None):
    if i is None:
        return self.getTokens(<parser.name>.<t.name>)
    else:

```

```

    return self.getToken(<parser.name>.<t.name>, i)
>>

ContextRuleGetterDecl(r) ::= <<
def <r.name>(self):
    return self.getTypedRuleContext(<parser.name>.<r.ctxName>,0)

>>

// should never be called
ContextRuleListGetterDecl(r) ::= <<
def <r.name>_list(self):
    return self.getTypedRuleContexts(<parser.name>.<r.ctxName>)

>>

ContextRuleListIndexedGetterDecl(r) ::= <<
def <r.name>(self, i:int=None):
    if i is None:
        return self.getTypedRuleContexts(<parser.name>.<r.ctxName>)
    else:
        return self.getTypedRuleContext(<parser.name>.<r.ctxName>,i)

>>

LexerRuleContext() ::= "RuleContext"

/** The rule context name is the rule followed by a suffix; e.g.,
 * r becomes rContext.
 */
RuleContextNameSuffix() ::= "Context"

ImplicitTokenLabel(tokenName) ::= "_<tokenName>"
ImplicitRuleLabel(ruleName) ::= "_<ruleName>"
ImplicitSetLabel(id) ::= "_tset<id>"
ListLabelName(label) ::= "<label>"

CaptureNextToken(d) ::= "<d.varName> = self._input.LT(1)"
CaptureNextTokenType(d) ::= "<d.varName> = self._input.LA(1)"

StructDecl(struct,ctorAttrs,attrs, getters,dispatchMethods,interfaces,extensionMembers) ::= <<
class <struct.name>(<if(contextSuperClass)><contextSuperClass><else>ParserRuleContext<endif>):

    def __init__(self, parser, parent:ParserRuleContext=None, invokingState:int=-1<struct.ctorAttrs:{ a | ,
<a.name><if(a.type)>:<a.type><endif>=None }>):
        super().__init__(parent, invokingState)
        self.parser = parser
        <attrs:{ a | <a> }; separator="\n">

```

```

    <struct.ctorAttrs:{ a | self.<a.name> = <a.name> }; separator="\n">

    <getters:{ g | <g> }; separator="\n\n">

    def getRuleIndex(self):
        return <parser.name>.RULE_<struct.derivedFromName>

    <if(struct.provideCopyFrom)> <! don't need copy unless we have subclasses !>
    def copyFrom(self, ctx:ParserRuleContext):
        super().copyFrom(ctx)
        <struct.attrs:{ a | self.<a.name> = ctx.<a.name> }; separator="\n">

    <endif>
    <dispatchMethods; separator="\n">
    <extensionMembers; separator="\n">

>>

AltLabelStructDecl(struct,attrs,getters,dispatchMethods) ::= <<
class <struct.name><<currentRule.name; format="cap">>Context):

    def __init__(self, parser, ctx:ParserRuleContext): # actually a <parser.name>.<currentRule.name;
format="cap">>Context
        super().__init__(parser)
        <attrs:{ a | <a> }; separator="\n">
        self.copyFrom(ctx)

    <getters:{ g | <g> }; separator="\n">

    <dispatchMethods; separator="\n">

>>

ListenerDispatchMethod(method) ::= <<
def <if(method.isEnter)>enter<else>exit<endif>Rule(self, listener:ParseTreeListener):
    if hasattr( listener, "<if(method.isEnter)>enter<else>exit<endif><struct.derivedFromName; format="cap">" ):
        listener.<if(method.isEnter)>enter<else>exit<endif><struct.derivedFromName; format="cap">(self)

>>

VisitorDispatchMethod(method) ::= <<
def accept(self, visitor:ParseTreeVisitor):
    if hasattr( visitor, "visit<struct.derivedFromName; format="cap">" ):
        return visitor.visit<struct.derivedFromName; format="cap">(self)
    else:
        return visitor.visitChildren(self)

>>

```

```

AttributeDecl(d) ::= "self.<d.name> = <if(d.initValue)><d.initValue><else>None<endif>"

/** If we don't know location of label def x, use this template */
labelref(x) ::= "<if(!x.isLocal)>localctx.<endif><x.name>"

/** For any action chunk, what is correctly-typed context struct ptr? */
ctx(actionChunk) ::= "localctx"

// used for left-recursive rules
recRuleAltPredicate(ruleName,opPrec) ::= "self.precpred(self._ctx, <opPrec>)"
recRuleSetReturnAction(src,name) ::= "$<name>=$<src>.<name>"
recRuleSetStopToken() ::= "self._ctx.stop = self._input.LT(-1)"

recRuleAltStartAction(ruleName, ctxName, label) ::= <<
localctx = <parser.name>.<ctxName>Context(self, _parentctx, _parentState)
<if(label)>localctx.<label> = _prevctx<endif>
self.pushNewRecursionContext(localctx, _startState, self.RULE_<ruleName>)
>>

recRuleLabeledAltStartAction(ruleName, currentAltLabel, label, isListLabel) ::= <<
localctx = <parser.name>.<currentAltLabel; format="cap">Context(self, <parser.name>.<ruleName>;
format="cap">Context(self, _parentctx, _parentState))
<if(label)>
<if(isListLabel)>
localctx.<label>.append(_prevctx)
<else>
localctx.<label> = _prevctx
<endif>
<endif>
self.pushNewRecursionContext(localctx, _startState, self.RULE_<ruleName>)
>>

recRuleReplaceContext(ctxName) ::= <<
localctx = <parser.name>.<ctxName>Context(self, localctx)
self._ctx = localctx
_prevctx = localctx
>>

recRuleSetPrevCtx() ::= <<
if self._parseListeners is not None:
self.triggerExitRuleEvent()
_prevctx = localctx
>>

LexerFile(lexerFile, lexer, namedActions) ::= <<
<fileHeader(lexerFile.grammarFileName, lexerFile.ANTLRVersion)>

```

```

from antlr4 import *
from io import StringIO

<namedActions.header>

<lexer>
>>

Lexer(lexer, atn, actionFuncs, sempredFuncs, superClass) ::= <<

<atn>

class <lexer.name>(<if(superClass)><superClass><else>Lexer<endif>):

    atn = ATNDeserializer().deserialize(serializedATN())

    decisionsToDFA = [ DFA(ds, i) for i, ds in enumerate(atn.decisionToState) ]

    <rest(lexer.modes):{m| <m> = <i>}; separator="\n">

    <lexer.tokens:{k | <k> = <lexer.tokens.(k)>}; separator="\n", wrap, anchor>

    modeNames = [ <lexer.modes:{m| "<m>"}; separator=", ", wrap, anchor> ]

    literalNames = [ "\<INVALID>",
        <lexer.literalNames:{t | <t>}; separator=", ", wrap, anchor> ]

    symbolicNames = [ "\<INVALID>",
        <lexer.symbolicNames:{t | <t>}; separator=", ", wrap, anchor> ]

    ruleNames = [ <lexer.ruleNames:{r | "<r>"}; separator=", ", wrap, anchor> ]

    grammarFileName = "<lexer.grammarFileName>"

    def __init__(self, input=None):
        super().__init__(input)
        self.checkVersion("<lexerFile.ANTLRVersion>")
        self._interp = LexerATNSimulator(self, self.atn, self.decisionsToDFA, PredictionContextCache())
        self._actions = None
        self._predicates = None

<namedActions.members>

<dumpActions(lexer, "", actionFuncs, sempredFuncs)>

>>

SerializedATN(model) ::= <<

```

<! only one segment, can be inlined !>

```
def serializedATN():
    with StringIO() as buf:
        buf.write("<model.serialized; wrap={ }<\n>    buf.write(" }>")
        return buf.getvalue()
```

>>

```
/** Using a type to init value map, try to init a type; if not in table
 * must be an object, default value is "null".
 */
```

```
initValue(typeName) ::= <<
<javaTypeInitMap.(typeName)>
>>
```

```
codeFileExtension() ::= ".py"
```

Found in path(s):

```
* /opt/cola/permits/1166873170_1621514800.65/0/antlr4-4-6-sources-1-
jar/org/antlr/v4/tool/templates/codegen/Python3/Python3.stg
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- \*/

```
tree grammar SourceGenTriggers;
options {
language    = Java;
tokenVocab = ANTLRParser;
ASTLabelType = GrammarAST;
}
}
```

```
@header {
package org.antlr.v4.codegen;
import org.antlr.v4.misc.Utils;
import org.antlr.v4.codegen.model.*;
import org.antlr.v4.codegen.model.decl.*;
import org.antlr.v4.tool.*;
import org.antlr.v4.tool.ast.*;
import java.util.Collections;
import java.util.Map;
import java.util.HashMap;
}
}
```

```
@members {
public OutputModelController controller;
public boolean hasLookaheadBlock;
public SourceGenTriggers(TreeNodeStream input, OutputModelController controller) {
this(input);
this.controller = controller;
}
}
}
```

```
dummy : block[null, null] ;
```

```
block[GrammarAST label, GrammarAST ebnfRoot] returns [List<? extends SrcOp> omos]
: ^( blk=BLOCK (^ (OPTIONS .+))?
  { List<CodeBlockForAlt> alts = new ArrayList<CodeBlockForAlt>();
    ( alternative { alts.add($alternative.altCodeBlock); } )+
  )
  {
  if ( alts.size()==1 && ebnfRoot==null) return alts;
  if ( ebnfRoot==null ) {
    Somos = DefaultOutputModelFactory.list(controller.getChoiceBlock((BlockAST)$blk, alts, $label));
  }
  else {
    Choice choice = controller.getEBNFBlock($ebnfRoot, alts);
    hasLookaheadBlock |= choice instanceof PlusBlock || choice instanceof StarBlock;
    Somos = DefaultOutputModelFactory.list(choice);
  }
  }
  ;
```

```
alternative returns [CodeBlockForAlt altCodeBlock, List<SrcOp> ops]
@init {
  boolean outerMost = inContext("RULE BLOCK");
}
@after {
  controller.finishAlternative($altCodeBlock, $ops, outerMost);
}
: a=alt[outerMost] { $altCodeBlock=$a.altCodeBlock; $ops=$a.ops; }
;
```

```
alt[boolean outerMost] returns [CodeBlockForAlt altCodeBlock, List<SrcOp> ops]
@init {
  // set alt if outer ALT only (the only ones with alt field set to Alternative object)
  AltAST altAST = (AltAST)retval.start;
  if ( outerMost ) controller.setCurrentOuterMostAlt(altAST.alt);
}
: {
  List<SrcOp> elems = new ArrayList<SrcOp>();
  // TODO: shouldn't we pass $start to controller.alternative()?
  $altCodeBlock = controller.alternative(controller.getCurrentOuterMostAlt(), outerMost);
  $altCodeBlock.ops = $ops = elems;
  controller.setCurrentBlock($altCodeBlock);
}
^( ALT elementOptions? ( element { if ($element.omos!=null) elems.addAll($element.omos); } )+ )

| ^(ALT elementOptions? EPSILON)
  { $altCodeBlock = controller.epsilon(controller.getCurrentOuterMostAlt(), outerMost); }
;
```

```

element returns [List<? extends SrcOp> omos]
: labeledElement { $omos = $labeledElement.omos; }
| atom[null,false] { $omos = $atom.omos; }
| subrule { $omos = $subrule.omos; }
| ACTION { $omos = controller.action((ActionAST)$ACTION); }
| SEMPRED { $omos = controller.sempred((ActionAST)$SEMPRED); }
| ^(ACTION elementOptions) { $omos = controller.action((ActionAST)$ACTION); }
| ^(SEMPRED elementOptions) { $omos = controller.sempred((ActionAST)$SEMPRED); }
;

```

```

labeledElement returns [List<? extends SrcOp> omos]
: ^(ASSIGN ID atom[$ID,false] ) { $omos = $atom.omos; }
| ^(PLUS_ASSIGN ID atom[$ID,false]) { $omos = $atom.omos; }
| ^(ASSIGN ID block[$ID,null] ) { $omos = $block.omos; }
| ^(PLUS_ASSIGN ID block[$ID,null]) { $omos = $block.omos; }
;

```

```

subrule returns [List<? extends SrcOp> omos]
: ^(OPTIONAL b=block[null,$OPTIONAL])
{
    $omos = $block.omos;
}
| ( ^(op=CLOSURE b=block[null,null])
| ^(op=POSITIVE_CLOSURE b=block[null,null])
)
{
    List<CodeBlockForAlt> alts = new ArrayList<CodeBlockForAlt>();
    SrcOp blk = $b.omos.get(0);
    CodeBlockForAlt alt = new CodeBlockForAlt(controller.delegate);
    alt.addOp(blk);
    alts.add(alt);
    SrcOp loop = controller.getEBNFBlock($op, alts); // "star it"
    hasLookaheadBlock |= loop instanceof PlusBlock || loop instanceof StarBlock;
    $omos = DefaultOutputModelFactory.list(loop);
}
| block[null, null] { $omos = $block.omos; }
;

```

```

blockSet[GrammarAST label, boolean invert] returns [List<SrcOp> omos]
: ^(SET atom[label,invert]+) { $omos = controller.set($SET, $label, invert); }
;

```

```

/*
setElement
: STRING_LITERAL
| TOKEN_REF
| ^(RANGE STRING_LITERAL STRING_LITERAL)

```

```

;
*/

// TODO: combine ROOT/BANG into one then just make new op ref'ing return value of atom/terminal...
// TODO: same for NOT
atom[GrammarAST label, boolean invert] returns [List<SrcOp> omos]
: ^(NOT a=atom[$label, true]) {$omos = $a.omos;}
| range[label] {$omos = $range.omos;}
| ^(DOT ID terminal[$label])
| ^(DOT ID ruleref[$label])
| ^(WILDCARD .) {$omos = controller.wildcard($WILDCARD, $label);}
| WILDCARD {$omos = controller.wildcard($WILDCARD, $label);}
| terminal[label] {$omos = $terminal.omos;}
| ruleref[label] {$omos = $ruleref.omos;}
| blockSet[$label, invert] {$omos = $blockSet.omos;}
;

ruleref[GrammarAST label] returns [List<SrcOp> omos]
: ^(RULE_REF ARG_ACTION? elementOptions?) {$omos = controller.ruleRef($RULE_REF, $label,
$ARG_ACTION);}
;

range[GrammarAST label] returns [List<SrcOp> omos]
: ^(RANGE a=STRING_LITERAL b=STRING_LITERAL)
;

terminal[GrammarAST label] returns [List<SrcOp> omos]
: ^(STRING_LITERAL .) {$omos = controller.stringRef($STRING_LITERAL, $label);}
| STRING_LITERAL {$omos = controller.stringRef($STRING_LITERAL, $label);}
| ^(TOKEN_REF ARG_ACTION .) {$omos = controller.tokenRef($TOKEN_REF, $label, $ARG_ACTION);}
| ^(TOKEN_REF .) {$omos = controller.tokenRef($TOKEN_REF, $label, null);}
| TOKEN_REF {$omos = controller.tokenRef($TOKEN_REF, $label, null);}
;

elementOptions
: ^(ELEMENT_OPTIONS elementOption+)
;

elementOption
: ID
| ^(ASSIGN ID ID)
| ^(ASSIGN ID STRING_LITERAL)
| ^(ASSIGN ID ACTION)
| ^(ASSIGN ID INT)
;

```

Found in path(s):

\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-

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 */
```

```
lexer grammar ActionSplitter;
```

```
options { filter=true; }
```

```
@header {
package org.antlr.v4.parse;
import org.antlr.v4.tool.*;
import org.antlr.v4.tool.ast.*;
}
```

```
@members {
ActionSplitterListener delegate;
```

```
public ActionSplitter(CharStream input, ActionSplitterListener delegate) {
    this(input, new RecognizerSharedState());
```

```

    this.delegate = delegate;
}

/** force filtering (and return tokens). triggers all above actions. */
public List<Token> getActionTokens() {
    List<Token> chunks = new ArrayList<Token>();
    Token t = nextToken();
    while ( t.getType()!=Token.EOF ) {
        chunks.add(t);
        t = nextToken();
    }
    return chunks;
}

private boolean isIDStartChar(int c) {
    return c == '_' || Character.isLetter(c);
}

// ignore comments right away

COMMENT
: /*' ( options {greedy=false;} : . )* */' {delegate.text($text);}
;

LINE_COMMENT
: //' ~(\n|\r)* \r? \n' {delegate.text($text);}
;

SET_NONLOCAL_ATTR
: '$ x=ID ':' y=ID WS? '=' expr=ATTR_VALUE_EXPR ';'
{
    delegate.setNonLocalAttr($text, $x, $y, $expr);
}
;

NONLOCAL_ATTR
: '$ x=ID ':' y=ID {delegate.nonLocalAttr($text, $x, $y);}
;

QUALIFIED_ATTR
: '$ x=ID ' y=ID {input.LA(1)!=''}? {delegate.qualifiedAttr($text, $x, $y);}
;

SET_ATTR
: '$ x=ID WS? '=' expr=ATTR_VALUE_EXPR ';'
{
    delegate.setAttr($text, $x, $expr);
}

```

```

}
;

ATTR
: '$' x=ID {delegate.attr($text, $x);}
;

// Anything else is just random text
TEXT
@init {StringBuilder buf = new StringBuilder();}
@after {delegate.text(buf.toString());}
: ( c=~(\\| '$) {buf.append((char)$c);}
| '\\$' {buf.append('$);}
| '\\ c=~('$) {buf.append('\\').append((char)$c);}
| {!isIDStartChar(input.LA(2))}? => '$' {buf.append('$);}
)+
;

```

fragment

```

ID : ('a'..'z'|'A'..'Z'|'_') ('a'..'z'|'A'..'Z'|'0'..'9'|'_')*
;

```

/\*\* Don't allow an = as first char to prevent \$x == 3; kind of stuff. \*/

fragment

```

ATTR_VALUE_EXPR
: ~'=' (~';)*
;

```

fragment

```

WS : ('\t'|\n'|\r')+
;

```

Found in path(s):

```

* /opt/cola/permits/1166873170_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/parse/ActionSplitter.g
No license file was found, but licenses were detected in source scan.

```

/\*

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*/

```

```

/** ANTLR tool checks output templates are compatible with tool code generation.
* For now, a simple string match used on x.y of x.y.z scheme.
* Must match Tool.VERSION during load to templates.
*
* REQUIRED.
*/

```

```

pythonTypeInitMap ::= [
  "bool":"False",
  "int":"0",
  "float":"0.0",
  "str": "",
  default:"None" // anything other than a primitive type is an object
]

```

```

// args must be <object-model-object>, <fields-resulting-in-STs>

```

```

ParserFile(file, parser, namedActions, contextSuperClass) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
var antlr4 = require('antlr4/index');
<if(file.genListener)>
var <file.grammarName>Listener = require('./<file.grammarName>Listener').<file.grammarName>Listener;
<endif>
<if(file.genVisitor)>
var <file.grammarName>Visitor = require('./<file.grammarName>Visitor').<file.grammarName>Visitor;
<endif>

```

```

<namedActions.header>

```

```

<parser>

```



>>

```
ListenerFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
var antlr4 = require('antlr4/index');

// This class defines a complete listener for a parse tree produced by <file.parserName>.
function <file.grammarName>Listener() {
  antlr4.tree.ParseTreeListener.call(this);
  return this;
}

<file.grammarName>Listener.prototype = Object.create(antlr4.tree.ParseTreeListener.prototype);
<file.grammarName>Listener.prototype.constructor = <file.grammarName>Listener;

<file.listenerNames>:{lname |
// Enter a parse tree produced by <file.parserName>#<lname>.
<file.grammarName>Listener.prototype.enter<lname; format="cap"> = function(ctx) {
\};

// Exit a parse tree produced by <file.parserName>#<lname>.
<file.grammarName>Listener.prototype.exit<lname; format="cap"> = function(ctx) {
\};

}; separator="\n">

exports.<file.grammarName>Listener = <file.grammarName>Listener;
>>
```

```
VisitorFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
var antlr4 = require('antlr4/index');

// This class defines a complete generic visitor for a parse tree produced by <file.parserName>.

function <file.grammarName>Visitor() {
  antlr4.tree.ParseTreeVisitor.call(this);
  return this;
}

<file.grammarName>Visitor.prototype = Object.create(antlr4.tree.ParseTreeVisitor.prototype);
<file.grammarName>Visitor.prototype.constructor = <file.grammarName>Visitor;

<file.visitorNames>:{lname |
// Visit a parse tree produced by <file.parserName>#<lname>.
<file.grammarName>Visitor.prototype.visit<lname; format="cap"> = function(ctx) {
  return this.visitChildren(ctx);
};
}
```

```

\});

}; separator="\n">

exports.<file.grammarName>Visitor = <file.grammarName>Visitor;
>>

fileHeader(grammarFileName, ANTLRVersion) ::= <<
// Generated from <grammarFileName; format="java-escape"> by ANTLR <ANTLRVersion>
// jshint ignore: start
>>

Parser(parser, funcs, atn, sempredFuncs, superClass) ::= <<
<if(superClass)>
var <superClass> = require('./<superClass>').<superClass>;
<endif>

var grammarFileName = "<parser.grammarFileName; format="java-escape">";

<atn>

var atn = new antlr4.atn.ATNDeserializer().deserialize(serializedATN);

var decisionsToDFA = atn.decisionToState.map( function(ds, index) { return new antlr4.dfa.DFA(ds, index); });

var sharedContextCache = new antlr4.PredictionContextCache();

var literalNames = [ <parser.literalNames:{t | <t>}; null="null", separator=", ", wrap, anchor> ];

var symbolicNames = [ <parser.symbolicNames:{t | <t>}; null="null", separator=", ", wrap, anchor> ];

var ruleNames = [ <parser.ruleNames:{r | "<r>"}; separator=", ", wrap, anchor> ];

function <parser.name> (input) {
  <superClass; null="antlr4.Parser">.call(this, input);
  this._interp = new antlr4.atn.ParserATNSimulator(this, atn, decisionsToDFA, sharedContextCache);
  this.ruleNames = ruleNames;
  this.literalNames = literalNames;
  this.symbolicNames = symbolicNames;
  <namedActions.members>
  return this;
}

<parser.name>.prototype = Object.create(<superClass; null="antlr4.Parser">.prototype);
<parser.name>.prototype.constructor = <parser.name>;

Object.defineProperty(<parser.name>.prototype, "atn", {

```

```

get : function() {
    return atn;
}
});

<parser.name>.EOF = antlr4.Token.EOF;
<if(parser.tokens)>
<parser.tokens:{k | <parser.name>.<k> = <parser.tokens.(k)>;}; separator="\n", wrap, anchor>
<endif>

<parser.rules:{r | <parser.name>.RULE_<r.name> = <r.index>;}; separator="\n", wrap, anchor>

<funcs; separator="\n">

<if(sempredFuncs)>
<parser.name>.prototype.sempred = function(localctx, ruleIndex, predIndex) {
    switch(ruleIndex) {
    <parser.sempredFuncs.values:{f | case <f.ruleIndex>:
        return this.<f.name>_sempred(localctx, predIndex);}; separator="\n">
        default:
            throw "No predicate with index:" + ruleIndex;
    }
};

<sempredFuncs.values; separator="\n">
<endif>

exports.<parser.name> = <parser.name>;

>>

dumpActions(recog, argFuncs, actionFuncs, sempredFuncs) ::= <<
<if(actionFuncs)>
<lexer.name>.prototype.action = function(localctx, ruleIndex, actionIndex) {
    switch (ruleIndex) {
    <recog.actionFuncs.values:{f|
case <f.ruleIndex>:
    this.<f.name>_action(localctx, actionIndex);
    break;}; separator="\n">
        default:
            throw "No registered action for:" + ruleIndex;
    }
};

<actionFuncs.values; separator="\n">
<endif>
<if(sempredFuncs)>
<lexer.name>.prototype.sempred = function(localctx, ruleIndex, predIndex) {

```

```

switch (ruleIndex) {
  <recog.sempredFuncs.values:{f} case <f.ruleIndex>:
return this.<f.name>_sempred(localctx, predIndex);}; separator="\n">
  default:
    throw "No registered predicate for:" + ruleIndex;
  }
};

```

```

<sempredFuncs.values; separator="\n">
<endif>
>>

```

```

/* This generates a private method since the actionIndex is generated, making an
* overriding implementation impossible to maintain.
*/

```

```

RuleActionFunction(r, actions) ::= <<

```

```

<lexer.name>.prototype.<r.name>_action = function(localctx , actionIndex) {
switch (actionIndex) {
  <actions:{index|
case <index>:
  <actions.(index)>
break;}; separator="\n">
  default:
    throw "No registered action for:" + actionIndex;
  }
};
>>

```

```

/* This generates a private method since the predIndex is generated, making an
* overriding implementation impossible to maintain.
*/

```

```

RuleSempredFunction(r, actions) ::= <<

```

```

<if (r.factory.g.lexer)><lexer.name><else><parser.name><endif>.prototype.<r.name>_sempred = function(localctx,
predIndex) {
switch(predIndex) {
  <actions:{index| case <index>:
return <actions.(index)>};}; separator="\n">
  default:
    throw "No predicate with index:" + predIndex;
  }
};
>>

```

```

RuleFunction(currentRule,args,code,locals,ruleCtx,altLabelCtxs,namedActions,finallyAction,postamble,exceptions)
::= <<

```

```

<ruleCtx>

<altLabelCtxs:{l | <altLabelCtxs.(l)>}; separator="\n">

<! Define fields of this parser to export the context classes !>
<parser.name>.<currentRule.ctxType> = <currentRule.ctxType>;

<parser.name>.prototype.<currentRule.name> = function(<currentRule.args:{a | <a.name>}; separator=", ">) {

    var localctx = new <currentRule.ctxType>(this, this._ctx, this.state<currentRule.args:{a | <a.name>}>>);
    this.enterRule(localctx, <currentRule.startState>, <parser.name>.RULE_<currentRule.name>);
    <namedActions.init>
    <locals; separator="\n">
    try {
        <code>
        <postamble; separator="\n">
        <namedActions.after>
    <if(exceptions)>
    <exceptions; separator="\n">
    <else>
    } catch (re) {
        if(re instanceof antlr4.error.RecognitionException) {
            localctx.exception = re;
            this._errHandler.reportError(this, re);
            this._errHandler.recover(this, re);
        } else {
            throw re;
        }
    }<endif> finally {
        <finallyAction>
        this.exitRule();
    }
    return localctx;
};

>>

```

```

LeftRecursiveRuleFunction(currentRule,args,code,locals,ruleCtx,altLabelCtxs,
    namedActions,finallyAction,postamble) ::=
<<

```

```

<ruleCtx>
<altLabelCtxs:{l | <altLabelCtxs.(l)>}; separator="\n">

<parser.name>.prototype.<currentRule.name> = function(_p<if(currentRule.args)>, <args:{a | , <a>}><endif>) {
    if(_p===undefined) {
        _p = 0;
    }

```

```

}
var _parentctx = this._ctx;
var _parentState = this.state;
var localctx = new <currentRule.ctxType>(this, this._ctx, _parentState<args:{ a | , <a.name>}>);
var _prevctx = localctx;
var _startState = <currentRule.startState>;
this.enterRecursionRule(localctx, <currentRule.startState>, <parser.name>.RULE_<currentRule.name>, _p);
<namedActions.init>
<locals; separator="\n">
try {
  <code>
  <postamble; separator="\n">
  <namedActions.after>
} catch( error) {
  if(error instanceof antlr4.error.RecognitionException) {
    localctx.exception = error;
    this._errHandler.reportError(this, error);
    this._errHandler.recover(this, error);
  } else {
    throw error;
  }
} finally {
  <finallyAction>
  this.unrollRecursionContexts(_parentctx)
}
return localctx;
};
>>

```

```

CodeBlockForOuterMostAlt(currentOuterMostAltCodeBlock, locals, preamble, ops) ::= <<
<if(currentOuterMostAltCodeBlock.altLabel)>localctx = new <currentOuterMostAltCodeBlock.altLabel;
format="cap">Context(this, localctx);<endif>
this.enterOuterAlt(localctx, <currentOuterMostAltCodeBlock.alt.altNum>);
<CodeBlockForAlt(currentAltCodeBlock=currentOuterMostAltCodeBlock, ...)>
>>

```

```

CodeBlockForAlt(currentAltCodeBlock, locals, preamble, ops) ::= <<
<locals; separator="\n">
<preamble; separator="\n">
<ops; separator="\n">
>>

```

```

LL1AltBlock(choice, preamble, alts, error) ::= <<
this.state = <choice.stateNumber>;
this._errHandler.sync(this);
<if(choice.label)><labelref(choice.label)> = this._input.LT(1);<endif>
<preamble; separator="\n">

```

```

switch(this._input.LA(1)) {
<choice.altLook,alts:{look,alt| <cases(ttypes=look)>
  <alt>
  break;}; separator="\n">
default:
  <error>
}
>>

```

```

LL1OptionalBlock(choice, alts, error) ::= <<
this.state = <choice.stateNumber>;
this._errHandler.sync(this);
switch (this._input.LA(1)) {
<choice.altLook,alts:{look,alt| <cases(ttypes=look)>
  <alt>
  break;}; separator="\n">
default:
  <error>
}
>>

```

```

LL1OptionalBlockSingleAlt(choice, expr, alts, preamble, error, followExpr) ::= <<
this.state = <choice.stateNumber>;
this._errHandler.sync(this);
<preamble; separator="\n">
if(<expr>) {
  <alts; separator="\n">
}
<!else if ( !(<followExpr> ) <error!>
>>

```

```

LL1StarBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
this.state = <choice.stateNumber>;
this._errHandler.sync(this);
<preamble; separator="\n">
while(<loopExpr>) {
  <alts; separator="\n">
  this.state = <choice.loopBackStateNumber>;
  this._errHandler.sync(this);
  <iteration>
}
>>

```

```

LL1PlusBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
this.state = <choice.blockStartStateNumber>; <! alt block decision !>
this._errHandler.sync(this);
<preamble; separator="\n">
do {

```

```

    <alts; separator="\n">
    this.state = <choice.stateNumber>; <! loopback/exit decision !>
    this._errHandler.sync(this);
    <iteration>
} while(<loopExpr>);
>>

// LL(*) stuff

AltBlock(choice, preamble, alts, error) ::= <<
this.state = <choice.stateNumber>;
this._errHandler.sync(this);
<if(choice.label)><labelref(choice.label)> = _input.LT(1)<endif>
<preamble; separator="\n">
var la_ = this._interp.adaptivePredict(this._input,<choice.decision>,this._ctx);
switch(la_) {
<alts:{alt |
case <i>:
    <alt>
    break;
}; separator="\n">
}
>>

OptionalBlock(choice, alts, error) ::= <<
this.state = <choice.stateNumber>;
this._errHandler.sync(this);
var la_ = this._interp.adaptivePredict(this._input,<choice.decision>,this._ctx);
<alts:{alt |
if(la_===<i><if(!choice.ast.greedy)>+1<endif>) {
    <alt>
}; separator="\n} else ">
}
>>

StarBlock(choice, alts, sync, iteration) ::= <<
this.state = <choice.stateNumber>;
this._errHandler.sync(this);
var _alt = this._interp.adaptivePredict(this._input,<choice.decision>,this._ctx)
while(!_alt!=<choice.exitAlt> && _alt!=antlr4.atn.ATN.INVALID_ALT_NUMBER) {
    if(_alt===1<if(!choice.ast.greedy)>+1<endif>) {
        <iteration>
        <alts> <! should only be one !>
    }
    this.state = <choice.loopBackStateNumber>;
    this._errHandler.sync(this);
    _alt = this._interp.adaptivePredict(this._input,<choice.decision>,this._ctx);
}

```



>>

```
PlusBlock(choice, alts, error) ::= <<
this.state = <choice.blockStartStateNumber>; <! alt block decision !>
this._errHandler.sync(this);
var _alt = 1<if(!choice.ast.greedy)>+1<endif>;
do {
  switch (_alt) {
    <alts:{alt|
case <i><if(!choice.ast.greedy)>+1<endif>:
<alt>
break;}; separator="\n">
default:
<error>
}
this.state = <choice.loopBackStateNumber>; <! loopback/exit decision !>
this._errHandler.sync(this);
_alt = this._interp.adaptivePredict(this._input,<choice.decision>, this._ctx);
} while ( _alt!=<choice.exitAlt> && _alt!=antlr4.atn.ATN.INVALID_ALT_NUMBER );
>>
```

```
Sync(s) ::= "sync(<s.expecting.name>)"
```

```
ThrowNoViableAlt(t) ::= "throw new antlr4.error.NoViableAltException(this);"
```

```
TestSetInline(s) ::= <<
<s.bitsets:{bits | <if(rest(rest(bits.ttypes)))><bitsetBitfieldComparison(s, bits)><else><bitsetInlineComparison(s,
bits)><endif>}; separator=" || ">
>>
```

```
// Javascript language spec - shift operators are 32 bits long max
testShiftInRange(shiftAmount) ::= <<
((<shiftAmount>) & ~0x1f) == 0
>>
```

```
// produces smaller bytecode only when bits.ttypes contains more than two items
bitsetBitfieldComparison(s, bits) ::= <%
(<testShiftInRange({<offsetShiftVar(s.varName, bits.shift)>})> && ((1 \<< <offsetShiftVar(s.varName,
bits.shift)>) & (<bits.ttypes:{ttype | (1 \<< <offsetShiftType(ttype, bits.shift)>)}); separator=" | ">)) !== 0)
%>
```

```
isZero ::= [
"0":true,
default:false
]
```

```
offsetShiftVar(shiftAmount, offset) ::= <%
```

```

<if(!isZero(offset))><shiftAmount> - <offset><else><shiftAmount><endif>
%>

offsetShiftType(shiftAmount, offset) ::= <%
<if(!isZero(offset))><parser.name>.<shiftAmount> - <offset><else><parser.name>.<shiftAmount><endif>
%>

// produces more efficient bytecode when bits.ttypes contains at most two items
bitsetInlineComparison(s, bits) ::= <%
<bits.ttypes: { ttype | <s.varName>===<parser.name>.<ttype> }; separator=" || ">
%>

cases(ttypes) ::= <<
<types: { t | case <parser.name>.<t>; }; separator="\n">
>>

InvokeRule(r, argExprsChunks) ::= <<
this.state = <r.stateNumber>;
<if(r.labels)><r.labels: {1 | <labelref(l)> =
}><endif>this.<r.name><(if(r.ast.options.p)><r.ast.options.p><(if(argExprsChunks)><endif><endif><argExprsChu
nks>);
>>

MatchToken(m) ::= <<
this.state = <m.stateNumber>;
<if(m.labels)><m.labels: {1 | <labelref(l)> = }><endif>this.match(<parser.name>.<m.name>);
>>

MatchSet(m, expr, capture) ::= "<CommonSetStuff(m, expr, capture, false)>"

MatchNotSet(m, expr, capture) ::= "<CommonSetStuff(m, expr, capture, true)>"

CommonSetStuff(m, expr, capture, invert) ::= <<
this.state = <m.stateNumber>;
<if(m.labels)><m.labels: {1 | <labelref(l)> = }>this._input.LT(1);<endif>
<capture>
<if(invert)>if(<m.varName>\<=0 || <expr><else>if(!(<expr>))<endif> {
  <if(m.labels)><m.labels: {1 | <labelref(l)> = }><endif>this._errHandler.recoverInline(this);
}
else {
  this._errHandler.reportMatch(this);
  this.consume();
}
>>

Wildcard(w) ::= <<
this.state = <w.stateNumber>;
<if(w.labels)><w.labels: {1 | <labelref(l)> = }><endif>matchWildcard();

```

```

>>

// ACTION STUFF

Action(a, foo, chunks) ::= "<chunks>"

ArgAction(a, chunks) ::= "<chunks>"

SemPred(p, chunks, failChunks) ::= <<
this.state = <p.stateNumber>;
if (!( <chunks>)) {
    throw new antlr4.error.FailedPredicateException(this, <p.predicate><if(failChunks)>,
<failChunks><elseif(p.msg)>, <p.msg><endif>);
}
>>

ExceptionClause(e, catchArg, catchAction) ::= <<
catch (<catchArg>) {
    <catchAction>
}
>>

// lexer actions are not associated with model objects

LexerSkipCommand() ::= "this.skip()"
LexerMoreCommand() ::= "this.more()"
LexerPopModeCommand() ::= "this.popMode()"
LexerTypeCommand(arg, grammar) ::= "this._type = <arg>"
LexerChannelCommand(arg, grammar) ::= "this._channel = <arg>"
LexerModeCommand(arg, grammar) ::= "this._mode = <arg>"
LexerPushModeCommand(arg, grammar) ::= "this.pushMode(<arg>)"

ActionText(t) ::= "<t.text>"
ActionTemplate(t) ::= "<t.st>"
ArgRef(a) ::= "localctx.<a.name>"
LocalRef(a) ::= "localctx.<a.name>"
RetValRef(a) ::= "localctx.<a.name>"
QRetValRef(a) ::= "<ctx(a)>.<a.dict>.<a.name>"
/** How to translate $tokenLabel */
TokenRef(t) ::= "<ctx(t)>.<t.name>"
LabelRef(t) ::= "<ctx(t)>.<t.name>"
ListLabelRef(t) ::= "<ctx(t)>.<ListLabelName(t.name)>"
SetAttr(s,rhsChunks) ::= "<ctx(s)>.<s.name> = <rhsChunks>"

TokenLabelType() ::= "<file.TokenLabelType; null={Token}>"
InputSymbolType() ::= "<file.InputSymbolType; null={Token}>"

TokenPropertyRef_text(t) ::= "(<ctx(t)>.<t.label>===null ? null : <ctx(t)>.<t.label>.text)"

```

```

TokenPropertyRef_type(t) ::= "<ctx(t)>.<t.label> === null ? 0 : <ctx(t)>.<t.label>.type)"
TokenPropertyRef_line(t) ::= "<ctx(t)>.<t.label> === null ? 0 : <ctx(t)>.<t.label>.line)"
TokenPropertyRef_pos(t) ::= "<ctx(t)>.<t.label> === null ? 0 : <ctx(t)>.<t.label>.column)"
TokenPropertyRef_channel(t) ::= "<ctx(t)>.<t.label> === null ? 0 : <ctx(t)>.<t.label>.channel)"
TokenPropertyRef_index(t) ::= "<ctx(t)>.<t.label> === null ? 0 : <ctx(t)>.<t.label>.tokenIndex)"
TokenPropertyRef_int(t) ::= "<ctx(t)>.<t.label> === null ? 0 : parseInt(<ctx(t)>.<t.label>.text))"

```

```

RulePropertyRef_start(r) ::= "<ctx(r)>.<r.label>===null ? null : <ctx(r)>.<r.label>.start)"
RulePropertyRef_stop(r) ::= "<ctx(r)>.<r.label>===null ? null : <ctx(r)>.<r.label>.stop)"
RulePropertyRef_text(r) ::= "<ctx(r)>.<r.label>===null ? null : this._input.getText(new
antlr4.Interval(<ctx(r)>.<r.label>.start,<ctx(r)>.<r.label>.stop)))"
RulePropertyRef_ctx(r) ::= "<ctx(r)>.<r.label>"
RulePropertyRef_parser(r) ::= "this"

```

```

ThisRulePropertyRef_start(r) ::= "localctx.start"
ThisRulePropertyRef_stop(r) ::= "localctx.stop"
ThisRulePropertyRef_text(r) ::= "this._input.getText(new antlr4.Interval(localctx.start, this._input.LT(-1)))"
ThisRulePropertyRef_ctx(r) ::= "localctx"
ThisRulePropertyRef_parser(r) ::= "this"

```

```

NonLocalAttrRef(s) ::= "getInvokingContext(<s.ruleIndex>).<s.name>"
SetNonLocalAttr(s, rhsChunks) ::= "getInvokingContext(<s.ruleIndex>).<s.name> = <rhsChunks>"

```

```

AddToLabelList(a) ::= "<ctx(a.label)>.<a.listName>.push(<labelref(a.label)>);"

```

```

TokenDecl(t) ::= "this.<t.name> = null; // <TokenLabelType(>"
TokenTypeDecl(t) ::= "var <t.name> = 0; // <TokenLabelType(> type"
TokenListDecl(t) ::= "this.<t.name> = []; // of <TokenLabelType(>s"
RuleContextDecl(r) ::= "this.<r.name> = null; // <r.ctxName>"
RuleContextListDecl(rdecl) ::= "this.<rdecl.name> = []; // of <rdecl.ctxName>s"

```

```

ContextTokenGetterDecl(t) ::= <<
<t.name> = function() {
    return this.getToken(<parser.name>.<t.name>, 0);
};
>>

```

```

// should never be called
ContextTokenListGetterDecl(t) ::= <<
def <t.name>_list(self):
    return self.getTokens(<parser.name>.<t.name>)
>>

```

```

ContextTokenListIndexedGetterDecl(t) ::= <<
<t.name> = function(i) {
    if(i===undefined) {
        i = null;
    }
}

```

```

    if(i===null) {
        return this.getTokens(<parser.name>.<t.name>);
    } else {
        return this.getToken(<parser.name>.<t.name>, i);
    }
};

```

```
>>
```

```

ContextRuleGetterDecl(r) ::= <<
<r.name> = function() {
    return this.getTypedRuleContext(<r.ctxName>,0);
};
>>

```

```
// should never be called
```

```

ContextRuleListGetterDecl(r) ::= <<
def <r.name>_list(self):
    return self.getTypedRuleContexts(<parser.name>.<r.ctxName>)
>>

```

```
>>
```

```

ContextRuleListIndexedGetterDecl(r) ::= <<
<r.name> = function(i) {
    if(i===undefined) {
        i = null;
    }
    if(i===null) {
        return this.getTypedRuleContexts(<r.ctxName>);
    } else {
        return this.getTypedRuleContext(<r.ctxName>,i);
    }
};
>>

```

```
LexerRuleContext() ::= "RuleContext"
```

```

/** The rule context name is the rule followed by a suffix; e.g.,
 * r becomes rContext.
 */

```

```
RuleContextNameSuffix() ::= "Context"
```

```
ImplicitTokenLabel(tokenName) ::= "_<tokenName>"
```

```
ImplicitRuleLabel(ruleName) ::= "_<ruleName>"
```

```
ImplicitSetLabel(id) ::= "_tset<id>"
```

```
ListLabelName(label) ::= "<label>"
```

```
CaptureNextToken(d) ::= "<d.varName> = self._input.LT(1)"
```

```
CaptureNextTokenType(d) ::= "<d.varName> = this._input.LA(1);"
```

```
StructDecl(struct,ctorAttrs,attrs, getters,dispatchMethods,interfaces,extensionMembers) ::= <<  
function <struct.name>(parser, parent, invokingState<struct.ctorAttrs:{a | , <a.name>}> ) {  
  if(parent===undefined) {  
    parent = null;  
  }  
  if(invokingState===undefined || invokingState===null) {  
    invokingState = -1;  
  }  
  <if(contextSuperClass)><contextSuperClass><else>antlr4.ParserRuleContext<endif>.call(this, parent,  
invokingState);  
  this.parser = parser;  
  this.ruleIndex = <parser.name>.RULE_<struct.derivedFromName>;  
  <attrs:{a | <a>} ; separator="\n">  
  <struct.ctorAttrs:{a | this.<a.name> = <a.name> || null;} ; separator="\n">  
  return this;  
}  
  
<struct.name>.prototype =  
Object.create(<if(contextSuperClass)><contextSuperClass><else>antlr4.ParserRuleContext<endif>.prototype);  
<struct.name>.prototype.constructor = <struct.name>;  
  
<getters:{g | <struct.name>.prototype.<g>} ; separator="\n\n">  
  
<if(struct.provideCopyFrom)> <! don't need copy unless we have subclasses !>  
<struct.name>.prototype.copyFrom = function(ctx) {  
<if(contextSuperClass)><contextSuperClass><else>antlr4.ParserRuleContext<endif>.prototype.copyFrom.call(this,  
ctx);  
  <struct.attrs:{a | this.<a.name> = ctx.<a.name>} ; separator="\n">  
};  
<endif>  
<dispatchMethods; separator="\n">  
<extensionMembers; separator="\n">  
  
>>
```

```
AltLabelStructDecl(struct,attrs, getters,dispatchMethods) ::= <<  
function <struct.name>(parser, ctx) {  
  <currentRule.name; format="cap">Context.call(this, parser);  
  <attrs:{a | <a>} ; separator="\n">  
  <currentRule.name; format="cap">Context.prototype.copyFrom.call(this, ctx);  
  return this;  
}  
  
<struct.name>.prototype = Object.create(<currentRule.name; format="cap">Context.prototype);  
<struct.name>.prototype.constructor = <struct.name>;
```

```

<! Define fields of this parser to export this struct/context class !>
<parser.name>.<struct.name> = <struct.name>;

<getters:{g | <struct.name>.prototype.<g>}; separator="\n\n">
<dispatchMethods; separator="\n">

>>

ListenerDispatchMethod(method) ::= <<
<struct.name>.prototype.<if(method.isEnter)>enter<else>exit<endif>Rule = function(listener) {
  if(listener instanceof <parser.grammarName>Listener ) {
    listener.<if(method.isEnter)>enter<else>exit<endif><struct.derivedFromName; format="cap">(this);
  }
};

>>

VisitorDispatchMethod(method) ::= <<
<struct.name>.prototype.accept = function(visitor) {
  if ( visitor instanceof <parser.grammarName>Visitor ) {
    return visitor.visit<struct.derivedFromName; format="cap">(this);
  } else {
    return visitor.visitChildren(this);
  }
};

>>

AttributeDecl(d) ::= "this.<d.name> = <if(d.initValue)><d.initValue><else>null<endif>"

/** If we don't know location of label def x, use this template */
labelref(x) ::= "<if(!x.isLocal)>localctx.<endif><x.name>"

/** For any action chunk, what is correctly-typed context struct ptr? */
ctx(actionChunk) ::= "localctx"

// used for left-recursive rules
recRuleAltPredicate(ruleName,opPrec) ::= "this.precpred(this._ctx, <opPrec>)"
recRuleSetReturnAction(src,name) ::= "$<name>=<src>.<name>"
recRuleSetStopToken() ::= "this._ctx.stop = this._input.LT(-1);"

recRuleAltStartAction(ruleName, ctxName, label) ::= <<
localctx = new <ctxName>Context(this, _parentctx, _parentState);
<if(label)>localctx.<label> = _prevctx;<endif>
this.pushNewRecursionContext(localctx, _startState, <parser.name>.RULE_<ruleName>);
>>

recRuleLabeledAltStartAction(ruleName, currentAltLabel, label, isListLabel) ::= <<

```

```

localctx = new <currentAltLabel; format="cap">Context(this, new <ruleName; format="cap">Context(this,
_parentctx, _parentState));
<if(label)>
<if(isListLabel)>
localctx.<label>.push(_prevctx);
<else>
localctx.<label> = _prevctx;
<endif>
<endif>
this.pushNewRecursionContext(localctx, _startState, <parser.name>.RULE_<ruleName>);
>>

```

```

recRuleReplaceContext(ctxName) ::= <<
localctx = new <ctxName>Context(this, localctx);
this._ctx = localctx;
_prevctx = localctx;
>>

```

```

recRuleSetPrevCtx() ::= <<
if(this._parseListeners!==null) {
    this.triggerExitRuleEvent();
}
_prevctx = localctx;
>>

```

```

LexerFile(lexerFile, lexer, namedActions) ::= <<
<fileHeader(lexerFile.grammarFileName, lexerFile.ANTLRVersion)>
var antlr4 = require('antlr4/index');

```

```

<namedActions.header>

```

```

<lexer>

```

```

>>

```

```

Lexer(lexer, atn, actionFuncs, sempredFuncs, superClass) ::= <<

```

```

<atn>

```

```

var atn = new antlr4.atn.ATNDeserializer().deserialize(serializedATN);

```

```

var decisionsToDFA = atn.decisionToState.map( function(ds, index) { return new antlr4.dfa.DFA(ds, index); });

```

```

function <lexer.name>(input) {
<if(superClass)><superClass><else>antlr4.Lexer<endif>.call(this, input);
    this._interp = new antlr4.atn.LexerATNSimulator(this, atn, decisionsToDFA, new
antlr4.PredictionContextCache());

```



```

    return this;
}

<lexer.name>.prototype = Object.create(<if(superClass)><superClass><else>antlr4.Lexer<endif>.prototype);
<lexer.name>.prototype.constructor = <lexer.name>;

<lexer.name>.EOF = antlr4.Token.EOF;
<lexer.tokens:{k | <lexer.name>.<k> = <lexer.tokens.(k)>;}; separator="\n", wrap, anchor>

<rest(lexer.modes):{m| <lexer.name>.<m> = <i>;}; separator="\n">

<lexer.name>.prototype.modeNames = [ <lexer.modes:{m| "<m>"}; separator=", ", wrap, anchor> ];

<lexer.name>.prototype.literalNames = [ <lexer.literalNames:{t | <t>}; null="null", separator=", ", wrap, anchor> ];

<lexer.name>.prototype.symbolicNames = [ <lexer.symbolicNames:{t | <t>}; null="null", separator=", ", wrap,
anchor> ];

<lexer.name>.prototype.ruleNames = [ <lexer.ruleNames:{r | "<r>"}; separator=", ", wrap, anchor> ];

<lexer.name>.prototype.grammarFileName = "<lexer.grammarFileName>";

<namedActions.members>

<dumpActions(lexer, "", actionFuncs, sempredFuncs)>

exports.<lexer.name> = <lexer.name>;

>>

SerializedATN(model) ::= <<
<! only one segment, can be inlined !>

var serializedATN = ["<model.serialized; wrap={",<n> " }>"].join("");

>>

/** Using a type to init value map, try to init a type; if not in table
 * must be an object, default value is "null".
 */
initValue(typeName) ::= <<
<javaTypeInitMap.(typeName)>
>>

codeFileExtension() ::= ".js"

Found in path(s):
* /opt/cola/permits/1166873170_1621514800.65/0/antlr4-4-6-sources-1-

```

jar/org/antlr/v4/tool/templates/codegen/JavaScript/JavaScript.stg  
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\*/

/\*

This file contains the actual layout of the messages emitted by ANTLR.

The text itself is coming out of the languages/\*stg files, according to the chosen locale.

This file contains the format that mimicks GCC output.

\*/

location(file, line, column) ::= "<file>:<line>:"

message(id, text) ::= "<text> (<id>)"

report(location, message, type) ::= "<location> <type>: <message>"

wantsSingleLineMessage() ::= "true"

Found in path(s):

\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/templates/messages/formats/gnu.stg

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\*/

Found in path(s):

\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/gui/GraphicsSupport.java

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\*/

/\*

This file contains the actual layout of the messages emitted by ANTLR.

This file contains the default format ANTLR uses.

\*/

location(file, line, column) ::= "<file>:<line>:<column>:"

message(id, text) ::= "<id> <text>"

report(location, message, type) ::= "<type>( <message.id>): <location> <message.text>"

wantsSingleLineMessage() ::= "false"

Found in path(s):

\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/templates/messages/formats/antlr.stg

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- \*/

/\*\* templates used to generate make-compatible dependencies \*/

```
/** Generate "f : x, y, z" dependencies for input
 * dependencies and generated files. in and out
 * are File objects. For example, you can say
 * <f.canonicalPath>
 */
dependencies(grammarFileName,in,out) ::= <<
<if(in)><grammarFileName>: <in; separator=", "><endif>
<out:{ f | <f> : <grammarFileName>}; separator="\n">
>>
```

Found in path(s):

\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/templates/depend.stg

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*/

```

```

/** ANTLR tool checks output templates are compatible with tool code generation.
* For now, a simple string match used on x.y of x.y.z scheme.
* Must match Tool.VERSION during load to templates.
*
* REQUIRED.
*/

```

```

pythonTypeInitMap ::= [
  "bool":"False",
  "int":"0",
  "float":"0.0",
  "str": "",
  default:"None" // anything other than a primitive type is an object
]

```

```

// args must be <object-model-object>, <fields-resulting-in-STs>

```

```

ParserFile(file, parser, namedActions, contextSuperClass) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>

```

```

# encoding: utf-8

```

```

from __future__ import print_function

```

```

from antlr4 import *

```

```

from io import StringIO

```

```

<namedActions.header>

```

```

<parser>

```

```

>>

```

```

ListenerFile(file, header, namedActions) ::= <<

```

```

<fileHeader(file.grammarFileName, file.ANTLRVersion)>
from antlr4 import *
<header>

# This class defines a complete listener for a parse tree produced by <file.parserName>.
class <file.grammarName>Listener(ParseTreeListener):

    <file.listenerNames:{lname |
# Enter a parse tree produced by <file.parserName>#<lname>.
def enter<lname; format="cap">(self, ctx):
    pass

# Exit a parse tree produced by <file.parserName>#<lname>.
def exit<lname; format="cap">(self, ctx):
    pass

}; separator="\n">

>>

```

```

VisitorFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
from antlr4 import *
<header>

# This class defines a complete generic visitor for a parse tree produced by <file.parserName>.

class <file.grammarName>Visitor(ParseTreeVisitor):

    <file.visitorNames:{lname |
# Visit a parse tree produced by <file.parserName>#<lname>.
def visit<lname; format="cap">(self, ctx):
    return self.visitChildren(ctx)

}; separator="\n">

>>

```

```

fileHeader(grammarFileName, ANTLRVersion) ::= <<
# Generated from <grammarFileName> by ANTLR <ANTLRVersion>
>>

Parser(parser, funcs, atn, sempredFuncs, superClass) ::= <<
<Parser_(ctor="parser_ctor", ...)>
>>

```

```

Parser_(parser, funcs, atn, sempredFuncs, ctor, superClass) ::= <<
<if(superClass)>
from .<superClass> import <superClass>

<endif>
<atn>

class <parser.name> ( <if(superClass)><superClass><else>Parser<endif> ):

    grammarFileName = "<parser.grammarFileName>"

    atn = ATNDeserializer().deserialize(serializedATN())

    decisionsToDFA = [ DFA(ds, i) for i, ds in enumerate(atn.decisionToState) ]

    sharedContextCache = PredictionContextCache()

    literalNames = [ <parser.literalNames:{t | u<t>}; null="u\"<INVALID>\"", separator=", ", wrap, anchor> ]

    symbolicNames = [ <parser.symbolicNames:{t | u<t>}; null="u\"<INVALID>\"", separator=", ", wrap, anchor> ]

    <parser.rules:{r | RULE_<r.name> = <r.index>}; separator="\n", wrap, anchor>

    ruleNames = [ <parser.ruleNames:{r | u"<r>"}; separator=", ", wrap, anchor> ]

    EOF = <TokenLabelType(>).EOF
    <if(parser.tokens)>
    <parser.tokens:{k | <k>=<parser.tokens.(k)>}; separator="\n", wrap, anchor>
    <endif>

    <parser:(ctor)(>

    <namedActions.members>

    <funcs; separator="\n">

    <if(sempredFuncs)>
    def sempred(self, localctx, ruleIndex, predIndex):
        if self._predicates == None:
            self._predicates = dict()
    <parser.sempredFuncs.values:{f |
        self._predicates[<f.ruleIndex>] = self.<f.name>_sempred}; separator="\n    ">
        pred = self._predicates.get(ruleIndex, None)
        if pred is None:
            raise Exception("No predicate with index:" + str(ruleIndex))
        else:
            return pred(localctx, predIndex)

```



```

    <sempredFuncs.values; separator="\n">
<endif>

>>

dumpActions(recog, argFuncs, actionFuncs, sempredFuncs) ::= <<
<if(actionFuncs)>
def action(self, localctx, ruleIndex, actionIndex):
    if self._actions is None:
        actions = dict()
    <recog.actionFuncs.values: {f}
        actions[<f.ruleIndex>] = self.<f.name>_action }; separator="\n">
        self._actions = actions
    action = self._actions.get(ruleIndex, None)
    if action is not None:
        action(localctx, actionIndex)
    else:
        raise Exception("No registered action for:" + str(ruleIndex))

<actionFuncs.values; separator="\n">

<endif>
<if(sempredFuncs)>
def sempred(self, localctx, ruleIndex, predIndex):
    if self._predicates is None:
        preds = dict()
    <recog.sempredFuncs.values: {f}
        preds[<f.ruleIndex>] = self.<f.name>_sempred}; separator="\n">
        self._predicates = preds
    pred = self._predicates.get(ruleIndex, None)
    if pred is not None:
        return pred(localctx, predIndex)
    else:
        raise Exception("No registered predicate for:" + str(ruleIndex))

<sempredFuncs.values; separator="\n">
<endif>

>>

parser_ctor(p) ::= <<
def __init__(self, input):
    super(<parser.name>, self).__init__(input)
    self.checkVersion("<file.ANTLRVersion>")
    self._interp = ParserATNSimulator(self, self.atn, self.decisionsToDFA, self.sharedContextCache)
    self._predicates = None

```

```
>>
```

```
/* This generates a private method since the actionIndex is generated, making an  
* overriding implementation impossible to maintain.  
*/
```

```
RuleActionFunction(r, actions) ::= <<
```

```
def <r.name>_action(self, localctx , actionIndex):
```

```
<actions: {index|
```

```
<if(first(actions))>
```

```
  if actionIndex == <index>:
```

```
    <actions.(index)>
```

```
<elseif(rest(actions))>
```

```
  elif actionIndex == <index>:
```

```
    <actions.(index)>
```

```
<endif> }; separator="\n">
```

```
>>
```

```
/* This generates a private method since the predIndex is generated, making an  
* overriding implementation impossible to maintain.  
*/
```

```
RuleSempredFunction(r, actions) ::= <<
```

```
def <r.name>_sempred(self, localctx, predIndex):
```

```
<actions: {index|
```

```
<if(first(actions))>
```

```
  if predIndex == <index>:
```

```
    return <actions.(index)>
```

```
<elseif(rest(actions))>
```

```
  elif predIndex == <index>:
```

```
    return <actions.(index)>
```

```
<endif> }; separator="\n">
```

```
>>
```

```
RuleFunction(currentRule,args,code,locals,ruleCtx,altLabelCtxs,namedActions,finallyAction,postamble,exceptions)
```

```
::= <<
```

```
<ruleCtx>
```

```
<altLabelCtxs: {l | <altLabelCtxs.(l)>}; separator="\n">
```

```
def <currentRule.name>(self<currentRule.args: {a | , <a.name>}>):
```

```
  localctx = <parser.name>.<currentRule.ctxType>(self, self._ctx, self.state<currentRule.args: {a | , <a.name>}>)
```

```
  self.enterRule(localctx, <currentRule.startState>, self.RULE_<currentRule.name>)
```

```
  <namedActions.init>
```

```
  <locals; separator="\n">
```

```

try:
  <code>
  <postamble; separator="\n">
  <namedActions.after>
<if(exceptions)>
  <exceptions; separator="\n">
<else>
except RecognitionException as re:
  localctx.exception = re
  self._errHandler.reportError(self, re)
  self._errHandler.recover(self, re)
<endif>
finally:
  <finallyAction>
  self.exitRule()
return localctx

>>

LeftRecursiveRuleFunction(currentRule,args,code,locals,ruleCtx,altLabelCtxs,
namedActions,finallyAction,postamble) ::=
<<

<ruleCtx>
<altLabelCtxs:{l | <altLabelCtxs.(l)>}; separator="\n">

def <currentRule.name>(self, _p=0<if(currentRule.args)>, <args:{a | , <a>}><endif>):
  _parentctx = self._ctx
  _parentState = self.state
  localctx = <parser.name>.<currentRule.ctxType>(self, self._ctx, _parentState<args:{a | , <a.name>}>)
  _prevctx = localctx
  _startState = <currentRule.startState>
  self.enterRecursionRule(localctx, <currentRule.startState>, self.RULE_<currentRule.name>, _p)
  <namedActions.init>
  <locals; separator="\n">
  try:
    <code>
    <postamble; separator="\n">
    <namedActions.after>
  except RecognitionException as re:
    localctx.exception = re
    self._errHandler.reportError(self, re)
    self._errHandler.recover(self, re)
  finally:
    <finallyAction>
    self.unrollRecursionContexts(_parentctx)
  return localctx

```

>>

```
CodeBlockForOuterMostAlt(currentOuterMostAltCodeBlock, locals, preamble, ops) ::= <<
<if(currentOuterMostAltCodeBlock.altLabel)>localctx = <parser.name>.<currentOuterMostAltCodeBlock.altLabel;
format="cap">Context(self, localctx)<endif>
self.enterOuterAlt(localctx, <currentOuterMostAltCodeBlock.alt.altNum>)
<CodeBlockForAlt(currentAltCodeBlock=currentOuterMostAltCodeBlock, ...)>
>>
```

```
CodeBlockForAlt(currentAltCodeBlock, locals, preamble, ops) ::= <<
<locals; separator="\n">
<preamble; separator="\n">
<ops; separator="\n">
>>
```

```
LL1AltBlock(choice, preamble, alts, error) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
<if(choice.label)><labelref(choice.label)> = _input.LT(1)<endif>
<preamble; separator="\n">
token = self._input.LA(1)
<choice.altLook,alts:{look,alt| <cases(ttypes=look)>
  <alt>
  pass}; separator="\nel">
else:
  <error>
>>
```

```
LL1OptionalBlock(choice, alts, error) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
token = self._input.LA(1)
<choice.altLook,alts:{look,alt| <cases(ttypes=look)>
  <alt>
  pass}; separator="\nel">
else:
  <error>
>>
```

```
LL1OptionalBlockSingleAlt(choice, expr, alts, preamble, error, followExpr) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
<preamble; separator="\n">
if <expr>:
  <alts; separator="\n">
<else if ( !( <followExpr> ) ) <error>!>
```

>>

```
LL1StarBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
<preamble; separator="\n">
while <loopExpr>:
  <alts; separator="\n">
  self.state = <choice.loopBackStateNumber>
  self._errHandler.sync(self)
  <iteration>
```

>>

```
LL1PlusBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
self.state = <choice.blockStartStateNumber> <! alt block decision !>
self._errHandler.sync(self)
<preamble; separator="\n">
while True:
  <alts; separator="\n">
  self.state = <choice.stateNumber> <! loopback/exit decision !>
  self._errHandler.sync(self)
  <iteration>
  if not (<loopExpr>):
    break
```

>>

```
// LL(*) stuff
```

```
AltBlock(choice, preamble, alts, error) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
<if(choice.label)><labelref(choice.label)> = _input.LT(1)<endif>
<preamble; separator="\n">
la_ = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)
<alts:{ alt |
if la_ == <i>:
  <alt>
  pass
}; separator="\nel">
```

>>

```
OptionalBlock(choice, alts, error) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
```

```

la_ = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)
<alts:{alt |
if la_ == <i><if(!choice.ast.greedy)>+1<endif>:
  <alt>
}; separator="\nel">

```

```
>>
```

```

StarBlock(choice, alts, sync, iteration) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
_alt = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)
while _alt!=<choice.exitAlt> and _alt!=ATN.INVALID_ALT_NUMBER:
  if _alt==1<if(!choice.ast.greedy)>+1<endif>:
    <iteration>
    <alts> <! should only be one !>
  self.state = <choice.loopBackStateNumber>
  self._errHandler.sync(self)
  _alt = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)

```

```
>>
```

```

PlusBlock(choice, alts, error) ::= <<
self.state = <choice.blockStartStateNumber> <! alt block decision !>
self._errHandler.sync(self)
_alt = 1<if(!choice.ast.greedy)>+1<endif>
while _alt!=<choice.exitAlt> and _alt!=ATN.INVALID_ALT_NUMBER:
  <alts:{alt |
if _alt == <i><if(!choice.ast.greedy)>+1<endif>:
  <alt>
}; separator="\nel">
  else:
    <error>
  self.state = <choice.loopBackStateNumber> <! loopback/exit decision !>
  self._errHandler.sync(self)
  _alt = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)

```

```
>>
```

```
Sync(s) ::= "sync(<s.expecting.name>)"
```

```
ThrowNoViableAlt(t) ::= "raise NoViableAltException(self)"
```

```

TestSetInline(s) ::= <<
<s.bitsets:{bits | <if(rest(rest(bits.ttypes)))><bitsetBitfieldComparison(s, bits)><else><bitsetInlineComparison(s,
bits)><endif>}; separator=" or ">
>>

```

```

// Java language spec 15.19 - shift operators mask operands rather than overflow to 0... need range test
testShiftInRange(shiftAmount) ::= <<
((<shiftAmount>) & ~0x3f) == 0
>>

// produces smaller bytecode only when bits.ttypes contains more than two items
bitsetBitfieldComparison(s, bits) ::= <%
(<testShiftInRange({<offsetShiftVar(s.varName, bits.shift)>})> and ((1 \<< <offsetShiftVar(s.varName,
bits.shift)>) & (<bits.ttypes:{ttype | (1 \<< <offsetShiftType(ttype, bits.shift)>)}; separator=" | ">)) != 0)
%>

isZero ::= [
"0":true,
default:false
]

offsetShiftVar(shiftAmount, offset) ::= <%
<if(!isZero.(offset))><shiftAmount> - <offset><else><shiftAmount><endif>
%>

offsetShiftType(shiftAmount, offset) ::= <%
<if(!isZero.(offset))><parser.name>.<shiftAmount> - <offset><else><parser.name>.<shiftAmount><endif>
%>

// produces more efficient bytecode when bits.ttypes contains at most two items
bitsetInlineComparison(s, bits) ::= <%
<bits.ttypes:{ttype | <s.varName>==<parser.name>.<ttype>}; separator=" or ">
%>

cases(ttypes) ::= <<
if token in [<ttypes:{t | <parser.name>.<t>}; separator=", ">]:
>>

InvokeRule(r, argExprsChunks) ::= <<
self.state = <r.stateNumber>
<if(r.labels)><r.labels:{1 | <labelref(l)> =
}><endif>self.<r.name><(if(r.ast.options.p)><r.ast.options.p><if(argExprsChunks)>,<endif><endif><argExprsChu
nks>)
>>

MatchToken(m) ::= <<
self.state = <m.stateNumber>
<if(m.labels)><m.labels:{1 | <labelref(l)> = }><endif>self.match(<parser.name>.<m.name>)
>>

MatchSet(m, expr, capture) ::= "<CommonSetStuff(m, expr, capture, false)>"

MatchNotSet(m, expr, capture) ::= "<CommonSetStuff(m, expr, capture, true)>"

```

```

CommonSetStuff(m, expr, capture, invert) ::= <<
self.state = <m.stateNumber>
<if(m.labels)><m.labels:{1 | <labelref(l)> = }>self._input.LT(1)<endif>
<capture>
<if(invert)>if <m.varName> \<= 0 or <expr><else>if not(<expr><endif>:
<if(m.labels)><m.labels:{1 | <labelref(l)> = }><else> <endif>self._errHandler.recoverInline(self)
else:
    self._errHandler.reportMatch(self)
    self.consume()
>>

```

```

Wildcard(w) ::= <<
self.state = <w.stateNumber>
<if(w.labels)><w.labels:{1 | <labelref(l)> = }><endif>self.matchWildcard()
>>

```

```
// ACTION STUFF
```

```
Action(a, foo, chunks) ::= "<chunks>"
```

```
ArgAction(a, chunks) ::= "<chunks>"
```

```

SemPred(p, chunks, failChunks) ::= <<
self.state = <p.stateNumber>
if not <chunks>:
    from antlr4.error.Errors import FailedPredicateException
    raise FailedPredicateException(self, <p.predicate><if(failChunks)>, <failChunks><elseif(p.msg)>,
<p.msg><endif>)
>>

```

```

ExceptionClause(e, catchArg, catchAction) ::= <<
catch (<catchArg>) {
    <catchAction>
}
>>

```

```
// lexer actions are not associated with model objects
```

```
LexerSkipCommand() ::= "skip()"
```

```
LexerMoreCommand() ::= "more()"
```

```
LexerPopModeCommand() ::= "popMode()"
```

```
LexerTypeCommand(arg, grammar) ::= "_type = <arg>"
```

```
LexerChannelCommand(arg, grammar) ::= "_channel = <arg>"
```

```
LexerModeCommand(arg, grammar) ::= "_mode = <arg>"
```

```
LexerPushModeCommand(arg, grammar) ::= "pushMode(<arg>)"
```



```

ActionText(t) ::= "<t.text>"
ActionTemplate(t) ::= "<t.st>"
ArgRef(a) ::= "localctx.<a.name>"
LocalRef(a) ::= "localctx.<a.name>"
RetValRef(a) ::= "localctx.<a.name>"
QRetValRef(a) ::= "<ctx(a)>.<a.dict>.<a.name>"
/** How to translate $tokenLabel */
TokenRef(t) ::= "<ctx(t)>.<t.name>"
LabelRef(t) ::= "<ctx(t)>.<t.name>"
ListLabelRef(t) ::= "<ctx(t)>.<ListLabelName(t.name)>"
SetAttr(s,rhsChunks) ::= "<ctx(s)>.<s.name> = <rhsChunks>"

TokenLabelType() ::= "<file.TokenLabelType; null={Token}>"
InputSymbolType() ::= "<file.InputSymbolType; null={Token}>"

TokenPropertyRef_text(t) ::= "(None if <ctx(t)>.<t.label> is None else <ctx(t)>.<t.label>.text)"
TokenPropertyRef_type(t) ::= "(0 if <ctx(t)>.<t.label> is None else <ctx(t)>.<t.label>.type)"
TokenPropertyRef_line(t) ::= "(0 if <ctx(t)>.<t.label> is None else <ctx(t)>.<t.label>.line)"
TokenPropertyRef_pos(t) ::= "(0 if <ctx(t)>.<t.label> is None else <ctx(t)>.<t.label>.column)"
TokenPropertyRef_channel(t) ::= "(0 if (<ctx(t)>.<t.label> is None else <ctx(t)>.<t.label>.channel)"
TokenPropertyRef_index(t) ::= "(0 if <ctx(t)>.<t.label> is None else <ctx(t)>.<t.label>.tokenIndex)"
TokenPropertyRef_int(t) ::= "(0 if <ctx(t)>.<t.label> is None else int(<ctx(t)>.<t.label>.text))"

RulePropertyRef_start(r) ::= "(None if <ctx(r)>.<r.label> is None else <ctx(r)>.<r.label>.start)"
RulePropertyRef_stop(r) ::= "(None if <ctx(r)>.<r.label> is None else <ctx(r)>.<r.label>.stop)"
RulePropertyRef_text(r) ::= "(None if <ctx(r)>.<r.label> is None else
self._input.getText((<ctx(r)>.<r.label>.start,<ctx(r)>.<r.label>.stop)))"
RulePropertyRef_ctx(r) ::= "<ctx(r)>.<r.label>"
RulePropertyRef_parser(r) ::= "self"

ThisRulePropertyRef_start(r) ::= "localctx.start"
ThisRulePropertyRef_stop(r) ::= "localctx.stop"
ThisRulePropertyRef_text(r) ::= "self._input.getText((localctx.start, self._input.LT(-1)))"
ThisRulePropertyRef_ctx(r) ::= "localctx"
ThisRulePropertyRef_parser(r) ::= "self"

NonLocalAttrRef(s) ::= "getInvokingContext(<s.ruleIndex>).<s.name>"
SetNonLocalAttr(s, rhsChunks) ::= "getInvokingContext(<s.ruleIndex>).<s.name> = <rhsChunks>"

AddToLabelList(a) ::= "<ctx(a.label)>.<a.listName>.append(<labelref(a.label)>)"

TokenDecl(t) ::= "self.<t.name> = None # <TokenLabelType()>"
TokenTypeDecl(t) ::= "self.<t.name> = 0 # <TokenLabelType()> type"
TokenListDecl(t) ::= "self.<t.name> = list() # of <TokenLabelType()>s"
RuleContextDecl(r) ::= "self.<r.name> = None # <r.ctxName>"
RuleContextListDecl(rdecl) ::= "self.<rdecl.name> = list() # of <rdecl.ctxName>s"

ContextTokenGetterDecl(t) ::= <<

```

```

def <t.name>(self):
    return self.getToken(<parser.name>.<t.name>, 0)
>>

// should never be called
ContextTokenListGetterDecl(t) ::= <<
def <t.name>_list(self):
    return self.getTokens(<parser.name>.<t.name>)
>>

ContextTokenListIndexedGetterDecl(t) ::= <<
def <t.name>(self, i=None):
    if i is None:
        return self.getTokens(<parser.name>.<t.name>)
    else:
        return self.getToken(<parser.name>.<t.name>, i)
>>

ContextRuleGetterDecl(r) ::= <<
def <r.name>(self):
    return self.getTypedRuleContext(<parser.name>.<r.ctxName>,0)

>>

// should never be called
ContextRuleListGetterDecl(r) ::= <<
def <r.name>_list(self):
    return self.getTypedRuleContexts(<parser.name>.<r.ctxName>)

>>

ContextRuleListIndexedGetterDecl(r) ::= <<
def <r.name>(self, i=None):
    if i is None:
        return self.getTypedRuleContexts(<parser.name>.<r.ctxName>)
    else:
        return self.getTypedRuleContext(<parser.name>.<r.ctxName>,i)

>>

LexerRuleContext() ::= "RuleContext"

/** The rule context name is the rule followed by a suffix; e.g.,
 * r becomes rContext.
 */
RuleContextNameSuffix() ::= "Context"

ImplicitTokenLabel(tokenName) ::= "_<tokenName>"

```

```

ImplicitRuleLabel(ruleName) ::= "_<ruleName>"
ImplicitSetLabel(id) ::= "_tset<id>"
ListLabelName(label) ::= "<label>"

CaptureNextToken(d) ::= "<d.varName> = self._input.LT(1)"
CaptureNextTokenType(d) ::= "<d.varName> = self._input.LA(1)"

StructDecl(struct,ctorAttrs,attrs, getters,dispatchMethods,interfaces,extensionMembers) ::= <<
class <struct.name>(<if(contextSuperClass)><contextSuperClass><else>ParserRuleContext<endif>):

    def __init__(self, parser, parent=None, invokingState=-1<struct.ctorAttrs:{a | <a.name>=None}>):
        super(<parser.name>.<struct.name>, self).__init__(parent, invokingState)
        self.parser = parser
        <attrs:{a | <a>}; separator="\n">
        <struct.ctorAttrs:{a | self.<a.name> = <a.name>}; separator="\n">

    <getters:{g | <g>}; separator="\n\n">

    def getRuleIndex(self):
        return <parser.name>.RULE_<struct.derivedFromName>

<if(struct.provideCopyFrom)> <! don't need copy unless we have subclasses !>
    def copyFrom(self, ctx):
        super(<parser.name>.<struct.name>, self).copyFrom(ctx)
        <struct.attrs:{a | self.<a.name> = ctx.<a.name>}; separator="\n">

<endif>
    <dispatchMethods; separator="\n">
    <extensionMembers; separator="\n">

>>

AltLabelStructDecl(struct,attrs, getters,dispatchMethods) ::= <<
class <struct.name>(<currentRule.name; format="cap">Context):

    def __init__(self, parser, ctx): # actually a <parser.name>.<currentRule.name; format="cap">Context)
        super(<parser.name>.<struct.name>, self).__init__(parser)
        <attrs:{a | <a>}; separator="\n">
        self.copyFrom(ctx)

    <getters:{g | <g>}; separator="\n">

    <dispatchMethods; separator="\n">

>>

ListenerDispatchMethod(method) ::= <<
def <if(method.isEnter)>enter<else>exit<endif>Rule(self, listener):

```

```

    if hasattr(listener, "<if(method.isEnter)>enter<else>exit<endif><struct.derivedFromName; format="cap">"):
        listener.<if(method.isEnter)>enter<else>exit<endif><struct.derivedFromName; format="cap">(self)

>>

VisitorDispatchMethod(method) ::= <<
def accept(self, visitor):
    if hasattr(visitor, "visit<struct.derivedFromName; format="cap">"):
        return visitor.visit<struct.derivedFromName; format="cap">(self)
    else:
        return visitor.visitChildren(self)

>>

AttributeDecl(d) ::= "self.<d.name> = <if(d.initValue)><d.initValue><else>None<endif>"

/** If we don't know location of label def x, use this template */
labelref(x) ::= "<if(!x.isLocal)>localctx.<endif><x.name>"

/** For any action chunk, what is correctly-typed context struct ptr? */
ctx(actionChunk) ::= "localctx"

// used for left-recursive rules
recRuleAltPredicate(ruleName,opPrec) ::= "self.precpred(self._ctx, <opPrec>)"
recRuleSetReturnAction(src,name) ::= "$<name>=<src>.<name>"
recRuleSetStopToken() ::= "self._ctx.stop = self._input.LT(-1)"

recRuleAltStartAction(ruleName, ctxName, label) ::= <<
localctx = <parser.name>.<ctxName>Context(self, _parentctx, _parentState)
<if(label)>localctx.<label> = _prevctx<endif>
self.pushNewRecursionContext(localctx, _startState, self.RULE_<ruleName>)
>>

recRuleLabeledAltStartAction(ruleName, currentAltLabel, label, isListLabel) ::= <<
localctx = <parser.name>.<currentAltLabel; format="cap">Context(self, <parser.name>.<ruleName;
format="cap">Context(self, _parentctx, _parentState))
<if(label)>
<if(isListLabel)>
localctx.<label>.append(_prevctx)
<else>
localctx.<label> = _prevctx
<endif>
<endif>
self.pushNewRecursionContext(localctx, _startState, self.RULE_<ruleName>)
>>

recRuleReplaceContext(ctxName) ::= <<

```

```

localctx = <parser.name>.<ctxName>Context(self, localctx)
self._ctx = localctx
_prevctx = localctx
>>

```

```

recRuleSetPrevCtx() ::= <<
if self._parseListeners is not None:
    self.triggerExitRuleEvent()
_prevctx = localctx
>>

```

```

LexerFile(lexerFile, lexer, namedActions) ::= <<
<fileHeader(lexerFile.grammarFileName, lexerFile.ANTLRVersion)>
# encoding: utf-8
from __future__ import print_function
from antlr4 import *
from io import StringIO

```

```

<namedActions.header>

```

```

<lexer>
>>

```

```

Lexer(lexer, atn, actionFuncs, sempredFuncs, superClass) ::= <<

```

```

<atn>

```

```

class <lexer.name>(<if(superClass)><superClass><else>Lexer<endif>):

```

```

    atn = ATNDeserializer().deserialize(serializedATN())

```

```

    decisionsToDFA = [ DFA(ds, i) for i, ds in enumerate(atn.decisionToState) ]

```

```

    <rest(lexer.modes):{m| <m> = <i>}; separator="\n">

```

```

    <lexer.tokens:{k | <k> = <lexer.tokens.(k)>}; separator="\n", wrap, anchor>

```

```

    modeNames = [ <lexer.modes:{m| u"<m>">; separator=", ", wrap, anchor> ]

```

```

    literalNames = [ u"<INVALID>",
        <lexer.literalNames:{t | u<t>}; separator=", ", wrap, anchor> ]

```

```

    symbolicNames = [ u"<INVALID>",
        <lexer.symbolicNames:{t | u<t>}; separator=", ", wrap, anchor> ]

```

```

    ruleNames = [ <lexer.ruleNames:{r | u"<r>">; separator=", ", wrap, anchor> ]

```

```

grammarFileName = u"<lexer.grammarFileName>"

def __init__(self, input=None):
    super(<lexer.name>, self).__init__(input)
    self.checkVersion("<lexerFile.ANTLRVersion>")
    self._interp = LexerATNSimulator(self, self.atn, self.decisionsToDFA, PredictionContextCache())
    self._actions = None
    self._predicates = None

<namedActions.members>

<dumpActions(lexer, "", actionFuncs, sempredFuncs)>

>>

SerializedATN(model) ::= <<
<! only one segment, can be inlined !>

def serializedATN():
    with StringIO() as buf:
        buf.write(u"<model.serialized; wrap={ }<n>    buf.write(u" }>")
        return buf.getvalue()

>>

/** Using a type to init value map, try to init a type; if not in table
 * must be an object, default value is "null".
 */
initValue(typeName) ::= <<
<javaTypeInitMap.(typeName)>
>>

codeFileExtension() ::= ".py"

Found in path(s):
* /opt/cola/permits/1166873170_1621514800.65/0/antlr4-4-6-sources-1-
jar/org/antlr/v4/tool/templates/codegen/Python2/Python2.stg
No license file was found, but licenses were detected in source scan.

/*
 * [The "BSD license"]
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 * modification, are permitted provided that the following conditions
 * are met:

```

```

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*/

```

```

/** The definitive ANTLR v3 tree grammar to walk/visit ANTLR v4 grammars.

```

```

* Parses trees created by ANTLRParser.g.
*
* Rather than have multiple tree grammars, one for each visit, I'm
* creating this generic visitor that knows about context. All of the
* boilerplate pattern recognition is done here. Then, subclasses can
* override the methods they care about. This prevents a lot of the same
* context tracking stuff like "set current alternative for current
* rule node" that is repeated in lots of tree filters.
*/

```

```

tree grammar GrammarTreeVisitor;
options {
language    = Java;
tokenVocab = ANTLRParser;
ASTLabelType = GrammarAST;
}

```

```

// Include the copyright in this source and also the generated source

```

```

@header {

```

```

/*

```

```

[The "BSD license"]

```

```

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```

```

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```

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\*/

```
package org.antlr.v4.parse;
import org.antlr.v4.Tool;
import org.antlr.v4.tool.*;
import org.antlr.v4.tool.ast.*;
import java.lang.reflect.InvocationTargetException;
import java.lang.reflect.Method;
}

@members {
public String grammarName;
public GrammarAST currentRuleAST;
public String currentModeName = LexerGrammar.DEFAULT_MODE_NAME;
public String currentRuleName;
public GrammarAST currentOuterAltRoot;
public int currentOuterAltNumber = 1; // 1..n
public int rewriteEBNFLevel = 0;

public GrammarTreeVisitor() { this(null); }

// Should be abstract but can't make gen'd parser abstract;
// subclasses should implement else everything goes to stderr!
public ErrorManager getErrorManager() { return null; }

public void visitGrammar(GrammarAST t) { visit(t, "grammarSpec"); }
public void visit(GrammarAST t, String ruleName) {
    CommonTreeNodeStream nodes = new CommonTreeNodeStream(new GrammarASTAdaptor(), t);
    setTreeNodeStream(nodes);
    try {
```



```

Method m = getClass().getMethod(ruleName);
m.invoke(this);
}
catch (Throwable e) {
    ErrorManager errMgr = getErrorManager();
    if ( e instanceof InvocationTargetException ) {
        e = e.getCause();
    }
    //e.printStackTrace(System.err);
    if ( errMgr==null ) {
        System.err.println("can't find rule "+ruleName+
            " or tree structure error: "+t.toStringTree()
        );
        e.printStackTrace(System.err);
    }
    else errMgr.toolError(ErrorType.INTERNAL_ERROR, e);
}
}

public void discoverGrammar(GrammarRootAST root, GrammarAST ID) { }
public void finishPrequels(GrammarAST firstPrequel) { }
public void finishGrammar(GrammarRootAST root, GrammarAST ID) { }

public void grammarOption(GrammarAST ID, GrammarAST valueAST) { }
public void ruleOption(GrammarAST ID, GrammarAST valueAST) { }
public void blockOption(GrammarAST ID, GrammarAST valueAST) { }
public void defineToken(GrammarAST ID) { }
public void defineChannel(GrammarAST ID) { }
public void globalNamedAction(GrammarAST scope, GrammarAST ID, ActionAST action) { }
public void importGrammar(GrammarAST label, GrammarAST ID) { }

public void modeDef(GrammarAST m, GrammarAST ID) { }

public void discoverRules(GrammarAST rules) { }
public void finishRules(GrammarAST rule) { }
public void discoverRule(RuleAST rule, GrammarAST ID, List<GrammarAST> modifiers,
    ActionAST arg, ActionAST returns, GrammarAST thrws,
    GrammarAST options, ActionAST locals,
    List<GrammarAST> actions,
    GrammarAST block) { }
public void finishRule(RuleAST rule, GrammarAST ID, GrammarAST block) { }
public void discoverLexerRule(RuleAST rule, GrammarAST ID, List<GrammarAST> modifiers,
    GrammarAST block) { }
public void finishLexerRule(RuleAST rule, GrammarAST ID, GrammarAST block) { }
public void ruleCatch(GrammarAST arg, ActionAST action) { }
public void finallyAction(ActionAST action) { }
public void discoverOuterAlt(AltAST alt) { }
public void finishOuterAlt(AltAST alt) { }

```

```

public void discoverAlt(AltAST alt) { }
public void finishAlt(AltAST alt) { }

public void ruleRef(GrammarAST ref, ActionAST arg) { }
public void tokenRef(TerminalAST ref) { }
public void elementOption(GrammarASTWithOptions t, GrammarAST ID, GrammarAST valueAST) { }
public void stringRef(TerminalAST ref) { }
public void wildcardRef(GrammarAST ref) { }
public void actionInAlt(ActionAST action) { }
public void sempredInAlt(PredAST pred) { }
public void label(GrammarAST op, GrammarAST ID, GrammarAST element) { }
public void lexerCallCommand(int outerAltNumber, GrammarAST ID, GrammarAST arg) { }
public void lexerCommand(int outerAltNumber, GrammarAST ID) { }

protected void enterGrammarSpec(GrammarAST tree) { }
protected void exitGrammarSpec(GrammarAST tree) { }

protected void enterPrequelConstructs(GrammarAST tree) { }
protected void exitPrequelConstructs(GrammarAST tree) { }

protected void enterPrequelConstruct(GrammarAST tree) { }
protected void exitPrequelConstruct(GrammarAST tree) { }

protected void enterOptionsSpec(GrammarAST tree) { }
protected void exitOptionsSpec(GrammarAST tree) { }

protected void enterOption(GrammarAST tree) { }
protected void exitOption(GrammarAST tree) { }

protected void enterOptionValue(GrammarAST tree) { }
protected void exitOptionValue(GrammarAST tree) { }

protected void enterDelegateGrammars(GrammarAST tree) { }
protected void exitDelegateGrammars(GrammarAST tree) { }

protected void enterDelegateGrammar(GrammarAST tree) { }
protected void exitDelegateGrammar(GrammarAST tree) { }

protected void enterTokensSpec(GrammarAST tree) { }
protected void exitTokensSpec(GrammarAST tree) { }

protected void enterTokenSpec(GrammarAST tree) { }
protected void exitTokenSpec(GrammarAST tree) { }

protected void enterChannelsSpec(GrammarAST tree) { }
protected void exitChannelsSpec(GrammarAST tree) { }

protected void enterChannelSpec(GrammarAST tree) { }

```

```
protected void exitChannelSpec(GrammarAST tree) { }

protected void enterAction(GrammarAST tree) { }
protected void exitAction(GrammarAST tree) { }

protected void enterRules(GrammarAST tree) { }
protected void exitRules(GrammarAST tree) { }

protected void enterMode(GrammarAST tree) { }
protected void exitMode(GrammarAST tree) { }

protected void enterLexerRule(GrammarAST tree) { }
protected void exitLexerRule(GrammarAST tree) { }

protected void enterRule(GrammarAST tree) { }
protected void exitRule(GrammarAST tree) { }

protected void enterExceptionGroup(GrammarAST tree) { }
protected void exitExceptionGroup(GrammarAST tree) { }

protected void enterExceptionHandler(GrammarAST tree) { }
protected void exitExceptionHandler(GrammarAST tree) { }

protected void enterFinallyClause(GrammarAST tree) { }
protected void exitFinallyClause(GrammarAST tree) { }

protected void enterLocals(GrammarAST tree) { }
protected void exitLocals(GrammarAST tree) { }

protected void enterRuleReturns(GrammarAST tree) { }
protected void exitRuleReturns(GrammarAST tree) { }

protected void enterThrowsSpec(GrammarAST tree) { }
protected void exitThrowsSpec(GrammarAST tree) { }

protected void enterRuleAction(GrammarAST tree) { }
protected void exitRuleAction(GrammarAST tree) { }

protected void enterRuleModifier(GrammarAST tree) { }
protected void exitRuleModifier(GrammarAST tree) { }

protected void enterLexerRuleBlock(GrammarAST tree) { }
protected void exitLexerRuleBlock(GrammarAST tree) { }

protected void enterRuleBlock(GrammarAST tree) { }
protected void exitRuleBlock(GrammarAST tree) { }

protected void enterLexerOuterAlternative(AltAST tree) { }
```

protected void exitLexerOuterAlternative(AltAST tree) { }

protected void enterOuterAlternative(AltAST tree) { }

protected void exitOuterAlternative(AltAST tree) { }

protected void enterLexerAlternative(GrammarAST tree) { }

protected void exitLexerAlternative(GrammarAST tree) { }

protected void enterLexerElements(GrammarAST tree) { }

protected void exitLexerElements(GrammarAST tree) { }

protected void enterLexerElement(GrammarAST tree) { }

protected void exitLexerElement(GrammarAST tree) { }

protected void enterLabeledLexerElement(GrammarAST tree) { }

protected void exitLabeledLexerElement(GrammarAST tree) { }

protected void enterLexerBlock(GrammarAST tree) { }

protected void exitLexerBlock(GrammarAST tree) { }

protected void enterLexerAtom(GrammarAST tree) { }

protected void exitLexerAtom(GrammarAST tree) { }

protected void enterActionElement(GrammarAST tree) { }

protected void exitActionElement(GrammarAST tree) { }

protected void enterAlternative(AltAST tree) { }

protected void exitAlternative(AltAST tree) { }

protected void enterLexerCommand(GrammarAST tree) { }

protected void exitLexerCommand(GrammarAST tree) { }

protected void enterLexerCommandExpr(GrammarAST tree) { }

protected void exitLexerCommandExpr(GrammarAST tree) { }

protected void enterElement(GrammarAST tree) { }

protected void exitElement(GrammarAST tree) { }

protected void enterAstOperand(GrammarAST tree) { }

protected void exitAstOperand(GrammarAST tree) { }

protected void enterLabeledElement(GrammarAST tree) { }

protected void exitLabeledElement(GrammarAST tree) { }

protected void enterSubrule(GrammarAST tree) { }

protected void exitSubrule(GrammarAST tree) { }

protected void enterLexerSubrule(GrammarAST tree) { }

```

protected void exitLexerSubrule(GrammarAST tree) { }

protected void enterBlockSuffix(GrammarAST tree) { }
protected void exitBlockSuffix(GrammarAST tree) { }

protected void enterEbnfSuffix(GrammarAST tree) { }
protected void exitEbnfSuffix(GrammarAST tree) { }

protected void enterAtom(GrammarAST tree) { }
protected void exitAtom(GrammarAST tree) { }

protected void enterBlockSet(GrammarAST tree) { }
protected void exitBlockSet(GrammarAST tree) { }

protected void enterSetElement(GrammarAST tree) { }
protected void exitSetElement(GrammarAST tree) { }

protected void enterBlock(GrammarAST tree) { }
protected void exitBlock(GrammarAST tree) { }

protected void enterRuleref(GrammarAST tree) { }
protected void exitRuleref(GrammarAST tree) { }

protected void enterRange(GrammarAST tree) { }
protected void exitRange(GrammarAST tree) { }

protected void enterTerminal(GrammarAST tree) { }
protected void exitTerminal(GrammarAST tree) { }

protected void enterElementOptions(GrammarAST tree) { }
protected void exitElementOptions(GrammarAST tree) { }

protected void enterElementOption(GrammarAST tree) { }
protected void exitElementOption(GrammarAST tree) { }

@Override
public void traceIn(String ruleName, int ruleIndex) {
    System.err.println("enter "+ruleName+": "+input.LT(1));
}

@Override
public void traceOut(String ruleName, int ruleIndex) {
    System.err.println("exit "+ruleName+": "+input.LT(1));
}
}

grammarSpec
@init {

```

```

enterGrammarSpec($start);
}
@after {
exitGrammarSpec($start);
}
: ^( GRAMMAR ID { grammarName=$ID.text;}
{discoverGrammar((GrammarRootAST)$GRAMMAR, $ID);}
prequelConstructs
{finishPrequels($prequelConstructs.firstOne);}
rules mode*
{finishGrammar((GrammarRootAST)$GRAMMAR, $ID);}
)
;

```

prequelConstructs returns [GrammarAST firstOne=null]

```

@init {
enterPrequelConstructs($start);
}
@after {
exitPrequelConstructs($start);
}
: {$firstOne=$start;} prequelConstruct+
|
;

```

prequelConstruct

```

@init {
enterPrequelConstructs($start);
}
@after {
exitPrequelConstructs($start);
}
: optionsSpec
| delegateGrammars
| tokensSpec
| channelsSpec
| action
;

```

optionsSpec

```

@init {
enterOptionsSpec($start);
}
@after {
exitOptionsSpec($start);
}
: ^(OPTIONS option*)
;

```

```

option
@init {
    enterOption($start);
    boolean rule = inContext("RULE ...");
    boolean block = inContext("BLOCK ...");
}
@after {
    exitOption($start);
}
: ^(a=ASSIGN ID v=optionValue)
{
    if ( block ) blockOption($ID, $v.start); // most specific first
    else if ( rule ) ruleOption($ID, $v.start);
    else grammarOption($ID, $v.start);
}
;

```

optionValue returns [String v]

```

@init {
    enterOptionValue($start);
    $v = $start.token.getText();
}
@after {
    exitOptionValue($start);
}
: ID
| STRING_LITERAL
| INT
;

```

delegateGrammars

```

@init {
    enterDelegateGrammars($start);
}
@after {
    exitDelegateGrammars($start);
}
: ^(IMPORT delegateGrammar+)
;

```

delegateGrammar

```

@init {
    enterDelegateGrammar($start);
}
@after {
    exitDelegateGrammar($start);
}

```

```

: ^(ASSIGN label=ID id=ID) {importGrammar($label, $id);}
| id=ID {importGrammar(null, $id);}
;

tokensSpec
@init {
enterTokensSpec($start);
}
@after {
exitTokensSpec($start);
}
: ^(TOKENS_SPEC tokenSpec+)
;

tokenSpec
@init {
enterTokenSpec($start);
}
@after {
exitTokenSpec($start);
}
: ID {defineToken($ID);}
;

channelsSpec
@init {
enterChannelsSpec($start);
}
@after {
exitChannelsSpec($start);
}
: ^(CHANNELS channelSpec+)
;

channelSpec
@init {
enterChannelSpec($start);
}
@after {
exitChannelSpec($start);
}
: ID {defineChannel($ID);}
;

action
@init {
enterAction($start);
}

```



```

@after {
    exitAction($start);
}
: ^(AT sc=ID? name=ID ACTION) {globalNamedAction($sc, $name, (ActionAST)$ACTION);}
;

rules
@init {
    enterRules($start);
}
@after {
    exitRules($start);
}
: ^(RULES {discoverRules($RULES);} (rule|lexerRule)* {finishRules($RULES);})
;

mode
@init {
    enterMode($start);
}
@after {
    exitMode($start);
}
: ^( MODE ID {currentModeName=$ID.text; modeDef($MODE, $ID);} lexerRule* )
;

lexerRule
@init {
    enterLexerRule($start);
    List<GrammarAST> mods = new ArrayList<GrammarAST>();
    currentOuterAltNumber=0;
}
@after {
    exitLexerRule($start);
}
: ^( RULE TOKEN_REF
    {currentRuleName=$TOKEN_REF.text; currentRuleAST=$RULE;}
    (^ (RULEMODIFIERS m=FRAGMENT {mods.add($m);}))?
    {discoverLexerRule((RuleAST)$RULE, $TOKEN_REF, mods, (GrammarAST)input.LT(1));}
    lexerRuleBlock
    {
        finishLexerRule((RuleAST)$RULE, $TOKEN_REF, $lexerRuleBlock.start);
        currentRuleName=null; currentRuleAST=null;
    }
    )
;

rule

```

```

@init {
enterRule($start);
List<GrammarAST> mods = new ArrayList<GrammarAST>();
List<GrammarAST> actions = new ArrayList<GrammarAST>(); // track roots
currentOuterAltNumber=0;
}
@after {
exitRule($start);
}
: ^( RULE RULE_REF {currentRuleName=$RULE_REF.text; currentRuleAST=$RULE;}
(^(RULEMODIFIERS (m=ruleModifier{mods.add($m.start);}+)))?
ARG_ACTION?
ret=ruleReturns?
thr=throwsSpec?
loc=locals?
( opts=optionsSpec
| a=ruleAction {actions.add($a.start);}
)*
{discoverRule((RuleAST)$RULE, $RULE_REF, mods, (ActionAST)$ARG_ACTION,
$ret.start!=null?(ActionAST)$ret.start.getChild(0):null,
$thr.start, $opts.start,
$loc.start!=null?(ActionAST)$loc.start.getChild(0):null,
actions, (GrammarAST)input.LT(1));}
ruleBlock exceptionGroup
{finishRule((RuleAST)$RULE, $RULE_REF, $ruleBlock.start); currentRuleName=null; currentRuleAST=null;}
)
;

exceptionGroup
@init {
enterExceptionGroup($start);
}
@after {
exitExceptionGroup($start);
}
: exceptionHandler* finallyClause?
;

exceptionHandler
@init {
enterExceptionHandler($start);
}
@after {
exitExceptionHandler($start);
}
: ^(CATCH ARG_ACTION ACTION) {ruleCatch($ARG_ACTION, (ActionAST)$ACTION);}
;

```

```

finallyClause
@init {
  enterFinallyClause($start);
}
@after {
  exitFinallyClause($start);
}
: ^(FINALLY ACTION) {finallyAction((ActionAST)$ACTION);}
;

```

```

locals
@init {
  enterLocals($start);
}
@after {
  exitLocals($start);
}
: ^(LOCALS ARG_ACTION)
;

```

```

ruleReturns
@init {
  enterRuleReturns($start);
}
@after {
  exitRuleReturns($start);
}
: ^(RETURNS ARG_ACTION)
;

```

```

throwsSpec
@init {
  enterThrowsSpec($start);
}
@after {
  exitThrowsSpec($start);
}
: ^(THROWS ID+)
;

```

```

ruleAction
@init {
  enterRuleAction($start);
}
@after {
  exitRuleAction($start);
}
: ^(AT ID ACTION)
;

```

```

;

ruleModifier
@init {
  enterRuleModifier($start);
}
@after {
  exitRuleModifier($start);
}
: PUBLIC
| PRIVATE
| PROTECTED
| FRAGMENT
;

lexerRuleBlock
@init {
  enterLexerRuleBlock($start);
}
@after {
  exitLexerRuleBlock($start);
}
: ^( BLOCK
  ( {
    currentOuterAltRoot = (GrammarAST)input.LT(1);
    currentOuterAltNumber++;
  }
  lexerOuterAlternative
  )+
  )
;

ruleBlock
@init {
  enterRuleBlock($start);
}
@after {
  exitRuleBlock($start);
}
: ^( BLOCK
  ( {
    currentOuterAltRoot = (GrammarAST)input.LT(1);
    currentOuterAltNumber++;
  }
  outerAlternative
  )+
  )
;

```

```
lexerOuterAlternative
@init {
  enterLexerOuterAlternative((AltAST)$start);
  discoverOuterAlt((AltAST)$start);
}
@after {
  finishOuterAlt((AltAST)$start);
  exitLexerOuterAlternative((AltAST)$start);
}
: lexerAlternative
;
```

```
outerAlternative
@init {
  enterOuterAlternative((AltAST)$start);
  discoverOuterAlt((AltAST)$start);
}
@after {
  finishOuterAlt((AltAST)$start);
  exitOuterAlternative((AltAST)$start);
}
: alternative
;
```

```
lexerAlternative
@init {
  enterLexerAlternative($start);
}
@after {
  exitLexerAlternative($start);
}
: ^(LEXER_ALT_ACTION lexerElements lexerCommand+)
  | lexerElements
;
```

```
lexerElements
@init {
  enterLexerElements($start);
}
@after {
  exitLexerElements($start);
}
: ^(ALT lexerElement+)
;
```

```
lexerElement
```

```

@init {
  enterLexerElement($start);
}
@after {
  exitLexerElement($start);
}
: labeledLexerElement
| lexerAtom
| lexerSubrule
| ACTION    {actionInAlt((ActionAST)$ACTION);}
| SEMPRED   {sempredInAlt((PredAST)$SEMPRED);}
| ^(ACTION elementOptions) {actionInAlt((ActionAST)$ACTION);}
| ^(SEMPRED elementOptions) {sempredInAlt((PredAST)$SEMPRED);}
| EPSILON
;

```

```

labeledLexerElement
@init {
  enterLabeledLexerElement($start);
}
@after {
  exitLabeledLexerElement($start);
}
: ^((ASSIGN|PLUS_ASSIGN) ID (lexerAtom|block))
;

```

```

lexerBlock
@init {
  enterLexerBlock($start);
}
@after {
  exitLexerBlock($start);
}
: ^(BLOCK optionsSpec? lexerAlternative+)
;

```

```

lexerAtom
@init {
  enterLexerAtom($start);
}
@after {
  exitLexerAtom($start);
}
: terminal
| ^(NOT blockSet)
| blockSet
| ^(WILDCARD elementOptions)
| WILDCARD

```

```
| LEXER_CHAR_SET
| range
| ruleref
;
```

actionElement

```
@init {
  enterActionElement($start);
}
@after {
  exitActionElement($start);
}
: ACTION
| ^(ACTION elementOptions)
| SEMPRED
| ^(SEMPRED elementOptions)
;
```

alternative

```
@init {
  enterAlternative((AltAST)$start);
  discoverAlt((AltAST)$start);
}
@after {
  finishAlt((AltAST)$start);
  exitAlternative((AltAST)$start);
}
: ^(ALT elementOptions? element+)
| ^(ALT elementOptions? EPSILON)
;
```

lexerCommand

```
@init {
  enterLexerCommand($start);
}
@after {
  exitLexerCommand($start);
}
: ^(LEXER_ACTION_CALL ID lexerCommandExpr)
  {lexerCallCommand(currentOuterAltNumber, $ID, $lexerCommandExpr.start);}
| ID
  {lexerCommand(currentOuterAltNumber, $ID);}
;
```

lexerCommandExpr

```
@init {
  enterLexerCommandExpr($start);
}
;
```

```

@after {
  exitLexerCommandExpr($start);
}
: ID
| INT
;

element
@init {
  enterElement($start);
}
@after {
  exitElement($start);
}
: labeledElement
| atom
| subrule
| ACTION    {actionInAlt((ActionAST)$ACTION);}
| SEMPRED   {sempredInAlt((PredAST)$SEMPRED);}
| ^(ACTION elementOptions) {actionInAlt((ActionAST)$ACTION);}
| ^(SEMPRED elementOptions) {sempredInAlt((PredAST)$SEMPRED);}

| ^(NOT blockSet)
| ^(NOT block)
;

astOperand
@init {
  enterAstOperand($start);
}
@after {
  exitAstOperand($start);
}
: atom
| ^(NOT blockSet)
| ^(NOT block)
;

labeledElement
@init {
  enterLabeledElement($start);
}
@after {
  exitLabeledElement($start);
}
: ^((ASSIGN|PLUS_ASSIGN) ID element) {label($start, $ID, $element.start);}
;

```



```
subrule
@init {
  enterSubrule($start);
}
@after {
  exitSubrule($start);
}
: ^(blockSuffix block)
| block
;
```

```
lexerSubrule
@init {
  enterLexerSubrule($start);
}
@after {
  exitLexerSubrule($start);
}
: ^(blockSuffix lexerBlock)
| lexerBlock
;
```

```
blockSuffix
@init {
  enterBlockSuffix($start);
}
@after {
  exitBlockSuffix($start);
}
: ebnfSuffix
;
```

```
ebnfSuffix
@init {
  enterEbnfSuffix($start);
}
@after {
  exitEbnfSuffix($start);
}
: OPTIONAL
| CLOSURE
| POSITIVE_CLOSURE
;
```

```
atom
@init {
  enterAtom($start);
}
```

```

@after {
  exitAtom($start);
}
: ^(DOT ID terminal)
| ^(DOT ID ruleref)
  | ^(WILDCARD elementOptions) {wildcardRef($WILDCARD);}
  | WILDCARD {wildcardRef($WILDCARD);}
  | terminal
  | blockSet
  | ruleref
;

```

```

blockSet
@init {
  enterBlockSet($start);
}
@after {
  exitBlockSet($start);
}
: ^(SET setElement+)
;

```

```

setElement
@init {
  enterSetElement($start);
}
@after {
  exitSetElement($start);
}
: ^(STRING_LITERAL elementOptions) {stringRef((TerminalAST)$STRING_LITERAL);}
| ^(TOKEN_REF elementOptions) {tokenRef((TerminalAST)$TOKEN_REF);}
| STRING_LITERAL {stringRef((TerminalAST)$STRING_LITERAL);}
| TOKEN_REF {tokenRef((TerminalAST)$TOKEN_REF);}
| ^(RANGE a=STRING_LITERAL b=STRING_LITERAL)
  {
  stringRef((TerminalAST)$a);
  stringRef((TerminalAST)$b);
  }
  | LEXER_CHAR_SET
;

```

```

block
@init {
  enterBlock($start);
}
@after {
  exitBlock($start);
}

```

```

: ^(BLOCK optionsSpec? ruleAction* ACTION? alternative+)
;

ruleref
@init {
  enterRuleref($start);
}
@after {
  exitRuleref($start);
}
: ^(RULE_REF arg=ARG_ACTION? elementOptions?)
{
  ruleRef($RULE_REF, (ActionAST)$ARG_ACTION);
  if ( $arg!=null ) actionInAlt((ActionAST)$arg);
}
;

range
@init {
  enterRange($start);
}
@after {
  exitRange($start);
}
: ^(RANGE STRING_LITERAL STRING_LITERAL)
;

terminal
@init {
  enterTerminal($start);
}
@after {
  exitTerminal($start);
}
: ^(STRING_LITERAL elementOptions)
  {stringRef((TerminalAST)$STRING_LITERAL);}
| STRING_LITERAL {stringRef((TerminalAST)$STRING_LITERAL);}
| ^(TOKEN_REF elementOptions) {tokenRef((TerminalAST)$TOKEN_REF);}
| TOKEN_REF {tokenRef((TerminalAST)$TOKEN_REF);}
;

elementOptions
@init {
  enterElementOptions($start);
}
@after {
  exitElementOptions($start);
}

```

```

: ^((ELEMENT_OPTIONS elementOption[(GrammarASTWithOptions)$start.getParent()]*))
;

elementOption[GrammarASTWithOptions t]
@init {
  enterElementOption($start);
}
@after {
  exitElementOption($start);
}
: ID    { elementOption(t, $ID, null);}
| ^((ASSIGN id=ID v=ID) {elementOption(t, $id, $v);}
| ^((ASSIGN ID v=STRING_LITERAL) {elementOption(t, $ID, $v);}
| ^((ASSIGN ID v=ACTION) {elementOption(t, $ID, $v);}
| ^((ASSIGN ID v=INT) {elementOption(t, $ID, $v);}
;

```

Found in path(s):

\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/parse/GrammarTreeVisitor.g

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\*/

```
tree grammar ATNBuilder;
```

```
options {
```

```
language    = Java;
```

```
tokenVocab  = ANTLRParser;
```

```
ASTLabelType = GrammarAST;
```

```
// filter    = true;
```

```
}
```

```
// Include the copyright in this source and also the generated source
```

```
@header {
```

```
/*
```

```
[The "BSD license"]
```

```
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```

```
*/
```

```
package org.antlr.v4.parse;
```

```
import org.antlr.v4.tool.*;
```

```
import org.antlr.v4.tool.ast.*;
```

```
import org.antlr.v4.automata.ATNFactory;
```

```
}
```

```
@members {
```

```
    ATNFactory factory;
```

```
    public ATNBuilder(TreeNodeStream input, ATNFactory factory) {
```

```

    this(input);
    this.factory = factory;
  }
}

```

dummy : block[null] ; // avoid error about no start rule

ruleBlock[GrammarAST ebnfRoot] returns [ATNFactory.Handle p]

```

@init {
  List<ATNFactory.Handle> alts = new ArrayList<ATNFactory.Handle>();
  int alt = 1;
  factory.setCurrentOuterAlt(alt);
}
: ^(BLOCK
  (^ (OPTIONS .*)?
  ( a=alternative
    {alts.add($a.p); factory.setCurrentOuterAlt(++alt);}
  )+
  )
  {$p = factory.block((BlockAST)$BLOCK, ebnfRoot, alts);}
;

```

block[GrammarAST ebnfRoot] returns [ATNFactory.Handle p]

```

@init {List<ATNFactory.Handle> alts = new ArrayList<ATNFactory.Handle>();}
: ^(BLOCK (^ (OPTIONS .*)? (a=alternative {alts.add($a.p);}))+
  {$p = factory.block((BlockAST)$BLOCK, ebnfRoot, alts);}
;

```

alternative returns [ATNFactory.Handle p]

```

@init {List<ATNFactory.Handle> els = new ArrayList<ATNFactory.Handle>();}
: ^(LEXER_ALT_ACTION a=alternative lexerCommands)
  {$p = factory.lexerAltCommands($a.p,$lexerCommands.p);}
| ^(ALT elementOptions? EPSILON) {$p = factory.epsilon($EPSILON);}
| ^(ALT elementOptions? (e=element {els.add($e.p);}))+ {$p = factory.alt(els);}
;

```

lexerCommands returns [ATNFactory.Handle p]

```

@init {List<ATNFactory.Handle> cmds = new ArrayList<ATNFactory.Handle>();}
: (c=lexerCommand {if ($c.cmd != null) cmds.add($c.cmd);}+
  {
  $p = factory.alt(cmds);
  }
;

```

lexerCommand returns [ATNFactory.Handle cmd]

```

: ^(LEXER_ACTION_CALL ID lexerCommandExpr)
  {$cmd = factory.lexerCallCommand($ID, $lexerCommandExpr.start);}
| ID

```

```

        {$cmd = factory.lexerCommand($ID);}
    ;

lexerCommandExpr
: ID
| INT
;

element returns [ATNFactory.Handle p]
: labeledElement {$p = $labeledElement.p;}
| atom {$p = $atom.p;}
| subrule {$p = $subrule.p;}
| ACTION {$p = factory.action((ActionAST)$ACTION);}
| SEMPRED {$p = factory.sempred((PredAST)$SEMPRED);}
| ^(ACTION .) {$p = factory.action((ActionAST)$ACTION);}
| ^(SEMPRED .) {$p = factory.sempred((PredAST)$SEMPRED);}
| ^(NOT b=blockSet[true]) {$p = $b.p;}
| LEXER_CHAR_SET {$p = factory.charSetLiteral($start);}
;

astOperand returns [ATNFactory.Handle p]
: atom {$p = $atom.p;}
| ^(NOT blockSet[true]) {$p = $blockSet.p;}
;

labeledElement returns [ATNFactory.Handle p]
: ^(ASSIGN ID element) {$p = factory.label($element.p);}
| ^(PLUS_ASSIGN ID element) {$p = factory.listLabel($element.p);}
;

subrule returns [ATNFactory.Handle p]
: ^(OPTIONAL block[$start]) {$p = $block.p;}
| ^(CLOSURE block[$start]) {$p = $block.p;}
| ^(POSITIVE_CLOSURE block[$start]) {$p = $block.p;}
| block[null] {$p = $block.p;}
;

blockSet[boolean invert] returns [ATNFactory.Handle p]
@init {List<GrammarAST> alts = new ArrayList<GrammarAST>();}
: ^(SET (setElement {alts.add($setElement.start);})+) {$p = factory.set($start, alts, $invert);}
;

/** Don't combine with atom otherwise it will build spurious ATN nodes */
setElement
: ^(STRING_LITERAL .)
| ^(TOKEN_REF .)
| STRING_LITERAL
| TOKEN_REF

```

```
| ^(RANGE a=STRING_LITERAL b=STRING_LITERAL)
| LEXER_CHAR_SET
;
```

atom returns [ATNFactory.Handle p]

```
: range    {$p = $range.p;}
| ^(DOT ID terminal) {$p = $terminal.p;}
| ^(DOT ID ruleref) {$p = $ruleref.p;}
| ^(WILDCARD .) {$p = factory.wildcard($start);}
| WILDCARD {$p = factory.wildcard($start);}
| blockSet[false] {$p = $blockSet.p;}
| terminal {$p = $terminal.p;}
| ruleref {$p = $ruleref.p;}
;
```

ruleref returns [ATNFactory.Handle p]

```
: ^(RULE_REF ARG_ACTION? ^(ELEMENT_OPTIONS *)) {$p = factory.ruleRef($RULE_REF);}
| ^(RULE_REF ARG_ACTION?) {$p = factory.ruleRef($RULE_REF);}
| RULE_REF {$p = factory.ruleRef($RULE_REF);}
;
```

range returns [ATNFactory.Handle p]

```
: ^(RANGE a=STRING_LITERAL b=STRING_LITERAL) {$p = factory.range($a,$b);}
;
```

terminal returns [ATNFactory.Handle p]

```
: ^(STRING_LITERAL .) {$p = factory.stringLiteral((TerminalAST)$start);}
| STRING_LITERAL {$p = factory.stringLiteral((TerminalAST)$start);}
| ^(TOKEN_REF ARG_ACTION .) {$p = factory.tokenRef((TerminalAST)$start);}
| ^(TOKEN_REF .) {$p = factory.tokenRef((TerminalAST)$start);}
| TOKEN_REF {$p = factory.tokenRef((TerminalAST)$start);}
;
```

elementOptions

```
: ^(ELEMENT_OPTIONS elementOption*)
;
```

elementOption

```
: ID
| ^(ASSIGN ID ID)
| ^(ASSIGN ID STRING_LITERAL)
| ^(ASSIGN ID ACTION)
| ^(ASSIGN ID INT)
;
```

Found in path(s):

\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/parse/ATNBuilder.g



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 */
```

```
SwiftTypeInitMap ::= [
  "Int": "0",
  "Int64": "0",
  "Float": "0.0",
  "Double": "0.0",
  "Bool": "false",
  default: "nil" // anything other than a primitive type is an object
]
SwiftTypeMap ::= [
  "int": "Int",
  "float": "Float",
  "long": "Int64",
  "double": "Double",
  "bool": "Bool",
  "boolean": "Bool",
```

```

default : key
]
// args must be <object-model-object>, <fields-resulting-in-STs>

ParserFile(file, parser, namedActions, contextSuperClass) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
<!package <file.genPackage>;!>
<endif>
<namedActions.header>
import Antlr4

<parser>
>>

ListenerFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
<!package <file.genPackage>;!>
<endif>
<header>
import Antlr4

/**
 * This interface defines a complete listener for a parse tree produced by
 * { @link <file.parserName> }.
 */
public protocol <file.grammarName>Listener: ParseTreeListener {
    <file.listenerNames>: {lname |
/**
<if(file.listenerLabelRuleNames.(lname))>
 * Enter a parse tree produced by the { @code <lname>\}
 * labeled alternative in { @link <file.parserName>#<file.listenerLabelRuleNames.(lname)>\}.
<else>
 * Enter a parse tree produced by { @link <file.parserName>#<lname>\}.
<endif>
- Parameters:
- ctx: the parse tree
 */
func enter<lname; format="cap">(_ ctx: <file.parserName>.<lname; format="cap">Context)
/**
<if(file.listenerLabelRuleNames.(lname))>
 * Exit a parse tree produced by the { @code <lname>\}
 * labeled alternative in { @link <file.parserName>#<file.listenerLabelRuleNames.(lname)>\}.
<else>
 * Exit a parse tree produced by { @link <file.parserName>#<lname>\}.
<endif>
- Parameters:

```

```

- ctx: the parse tree
*/
func exit<lname; format="cap">(_ ctx: <file.parserName>.<lname; format="cap">Context)); separator="\n">
}
>>

```

```

BaseListenerFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
<!package <file.genPackage>;!>
<endif>
<header>

```

```

import Antlr4

```

```

/**
 * This class provides an empty implementation of { @link <file.grammarName>Listener },
 * which can be extended to create a listener which only needs to handle a subset
 * of the available methods.
 */
open class <file.grammarName>BaseListener: <file.grammarName>Listener {
    public init() { \}
    <file.listenerNames:{lname |

/**
 * { @inheritDoc\}
 *
 * \<p>The default implementation does nothing.\</p>
 */
open func enter<lname; format="cap">(_ ctx: <file.parserName>.<lname; format="cap">Context) { \}
/**
 * { @inheritDoc\}
 *
 * \<p>The default implementation does nothing.\</p>
 */
open func exit<lname; format="cap">(_ ctx: <file.parserName>.<lname; format="cap">Context) { \} };
separator="\n">

/**
 * { @inheritDoc\}
 *
 * \<p>The default implementation does nothing.\</p>
 */
open func enterEveryRule(_ ctx: ParserRuleContext) { }
/**
 * { @inheritDoc\}
 *

```

```

* \<p>The default implementation does nothing.\</p>
*/
open func exitEveryRule(_ ctx: ParserRuleContext) { }
/**
* { @inheritDoc\}
*
* \<p>The default implementation does nothing.\</p>
*/
open func visitTerminal(_ node: TerminalNode) { }
/**
* { @inheritDoc\}
*
* \<p>The default implementation does nothing.\</p>
*/
open func visitErrorNode(_ node: ErrorNode) { }
}
>>

```

```

VisitorFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
<!package <file.genPackage>;!>
<endif>
<header>
import Antlr4

/**
* This interface defines a complete generic visitor for a parse tree produced
* by { @link <file.parserName>}.
*
* @param \<T> The return type of the visit operation. Use { @link Void} for
* operations with no return type.
*/
open class <file.grammarName>Visitor\<T>: ParseTreeVisitor\<T> {
  <file.visitorNames:{Iname |
/**
<if(file.visitorLabelRuleNames.(Iname))>
* Visit a parse tree produced by the { @code <Iname>}
* labeled alternative in { @link <file.parserName>#<file.visitorLabelRuleNames.(Iname)>}.
<else>
* Visit a parse tree produced by { @link <file.parserName>#<Iname>}.
<endif>
- Parameters:
- ctx: the parse tree
- returns: the visitor result
*/
open func visit<Iname; format="cap">(_ ctx: <file.parserName>.<Iname; format="cap">Context) -> T{
  fatalError(#function + " must be overridden")

```

```

\}
}; separator="\n">
}
>>

```

```

BaseVisitorFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
<!package <file.genPackage>;!>
<endif>
<header>
import Antlr4

/**
 * This class provides an empty implementation of { @link <file.grammarName>Visitor},
 * which can be extended to create a visitor which only needs to handle a subset
 * of the available methods.
 *
 * @param \<T> The return type of the visit operation. Use { @link Void} for
 * operations with no return type.
 */
open class <file.grammarName>BaseVisitor\<T>: AbstractParseTreeVisitor\<T> {
  <file.visitorNames:{lname |
/**
 * { @inheritDoc\}
 *
 * \<p>The default implementation returns the result of calling
 * { @link #visitChildren\} on { @code ctx\}.\</p>
 */
  open func visit<lname; format="cap">(_ ctx: <file.parserName>.<lname; format="cap">Context) -> T? { return
  visitChildren(ctx) \}}; separator="\n">
  }
>>

```

```

fileHeader(grammarFileName, ANTLRVersion) ::= <<
// Generated from <grammarFileName; format="java-escape"> by ANTLR <ANTLRVersion>
>>

```

```

Parser(parser, funcs, atn, sempredFuncs, superClass) ::= <<
<Parser_(ctor="parser_ctor", ...)>
>>

```

```

Parser_(parser, funcs, atn, sempredFuncs, ctor, superClass) ::= <<
</*!/@SuppressWarnings({"all", "warnings", "unchecked", "unused", "cast"})!>
open class <parser.name>: <superClass; null="Parser"> {

```

```

  internal static var _decisionToDFA: [DFA] = {
    var decisionToDFA = [DFA]()

```

```

let length = <parser.name>._ATN.getNumberOfDecisions()
for i in 0..<length> {
  <!-- decisionToDFA[i] = DFA(<parser.name>._ATN.getDecisionState(i)!, i);!>
  decisionToDFA.append(DFA(<parser.name>._ATN.getDecisionState(i)!, i))
}
return decisionToDFA
}()
internal static let _sharedContextCache: PredictionContextCache = PredictionContextCache()
<if(parser.tokens)>
public enum Tokens: Int {
  case EOF = -1, <parser.tokens:{k | <k> = <parser.tokens.(k)>}; separator=", ", wrap, anchor>
}
<endif>
public static let <parser.rules:{r | RULE_<r.name> = <r.index>}; separator=", ", wrap, anchor>
public static let ruleNames: [String] = [
  <parser.ruleNames:{r | "<r>"}; separator=", ", wrap, anchor>
]

<vocabulary(parser.literalNames, parser.symbolicNames)>

override
open func getGrammarFileName() -> String { return "<parser.grammarFileName; format="java-escape">" }

override
open func getRuleNames() -> [String] { return <parser.name>.ruleNames }

override
open func getSerializedATN() -> String { return <parser.name>._serializedATN }

override
open func getATN() -> ATN { return <parser.name>._ATN }

<namedActions.members>
<parser:(ctor)>
<funcs; separator="\n">

<if(sempredFuncs)>
  override
  open func sempred(_ _localctx: RuleContext?, _ ruleIndex: Int, _ predIndex: Int)throws -> Bool {
    switch (ruleIndex) {
      <parser.sempredFuncs.values:{f}
    case <f.ruleIndex>:
      return try <f.name>_sempred(_localctx?.castdown(<f.ctxType>.self), predIndex)); separator="\n">
      default: return true
    }
  }
  <!--return true;!-->
}
<sempredFuncs.values; separator="\n">

```

```

<endif>

<atn>
  public static let _serializedATN : String = <parser.name>ATN().jsonString
  public static let _ATN: ATN = ATNDeserializer().deserializeFromJson(_serializedATN)
}
>>

vocabulary(literalNames, symbolicNames) ::= <<
private static let _LITERAL_NAMES: [String?] = [
  <literalNames: {t | <t>}; null="nil", separator=", ", wrap, anchor>
]
private static let _SYMBOLIC_NAMES: [String?] = [
  <symbolicNames: {t | <t>}; null="nil", separator=", ", wrap, anchor>
]
public static let VOCABULARY: Vocabulary = Vocabulary(_LITERAL_NAMES, _SYMBOLIC_NAMES)

/**
 * @deprecated Use {@link #VOCABULARY} instead.
 */
//@Deprecated
public let tokenNames: [String?] = {
  let length = _SYMBOLIC_NAMES.count
  var tokenNames = [String?](repeating: nil, count: length)
  for i in 0..

```

```

switch (ruleIndex) {
  <recog.actionFuncs.values:{f}
case <f.ruleIndex>:
  <f.name>_action((_localctx as <f.ctxType>?), actionIndex)
  }; separator="\n">
default: break
}
}
<actionFuncs.values; separator="\n">
<endif>
<if(sempredFuncs)>
override
open func sempred(_ _localctx:RuleContext?, _ ruleIndex: Int, _ predIndex: Int) throws -> Bool{
  switch (ruleIndex) {
  <recog.sempredFuncs.values:{f}
case <f.ruleIndex>:
  return try <f.name>_sempred(_localctx?.castdown(<f.ctxType>.self), predIndex)); separator="\n">
default: return true
  }
  <!return true;!>
}
<sempredFuncs.values; separator="\n">
<endif>
>>

parser_ctor(p) ::= <<

open override func getVocabulary() -> Vocabulary {
  return <p.name>.VOCABULARY
}

public override init(_ input:TokenStream)throws {
  RuntimeMetaData.checkVersion("4.6", RuntimeMetaData.VERSION)
  try super.init(input)
  _interp = ParserATNSimulator(self,<p.name>._ATN,<p.name>._decisionToDFA,
  <parser.name>._sharedContextCache)
}
>>

/* This generates a private method since the actionIndex is generated, making an
* overriding implementation impossible to maintain.
*/
RuleActionFunction(r, actions) ::= <<
private func <r.name>_action(_ _localctx: <r.ctxType>?, _ actionIndex: Int) {
  switch (actionIndex) {
  <actions:{index|
case <index>:
  <actions.(index)>

```



```

}; separator="\n">
default: break
}
}
>>

```

```

/* This generates a private method since the predIndex is generated, making an
* overriding implementation impossible to maintain.
*/

```

```

RuleSempredFunction(r, actions) ::= <<
private func <r.name>_sempred(_ _localctx: <r.ctxType>!, _ predIndex: Int) throws -> Bool {
switch (predIndex) {
<actions:{index|
case <index>:return <actions.(index)>; separator="\n">
default: return true
}
<!return true;!>
}
}
>>

```

```

RuleFunction(currentRule,args,code,locals,ruleCtx,altLabelCtxs,namedActions,finallyAction,postamble,exceptions)
::= <<
<ruleCtx>
<altLabelCtxs:{l | <altLabelCtxs.(l)>; separator="\n">
@discardableResult
<if(currentRule.modifiers)><currentRule.modifiers:{f | <f> }><else>open func
<endif><currentRule.name><(if(first(args))>_<endif><args; separator=", _">) throws -> <currentRule.ctxType> {
var _localctx: <currentRule.ctxType> = <currentRule.ctxType>(_ctx, getState()<currentRule.args:{a | ,
<a.name>}>)>
try enterRule(_localctx, <currentRule.startState>, <parser.name>.RULE_<currentRule.name>)
<namedActions.init>
<locals; separator="\n">
defer {
<finallyAction>
try! exitRule()
}
do {
<if(currentRule.hasLookaheadBlock)>
var _alt:Int
<endif>
<code>
<postamble; separator="\n">
<namedActions.after>
}
<if(exceptions)>
<exceptions; separator="\n">
<else>
catch ANTLRException.recognition(let re) {

```

```

    _localctx.exception = re
    _errHandler.reportError(self, re)
    try _errHandler.recover(self, re)
  }
<endif>

return _localctx
}
>>

LeftRecursiveRuleFunction(currentRule,args,code,locals,ruleCtx,altLabelCtxs,
namedActions,finallyAction,postamble) ::=
<<

<ruleCtx>
<altLabelCtxs:{l | <altLabelCtxs.(l)>}; separator="\n">

<if(currentRule.modifiers)><currentRule.modifiers:{f | <f> }><else>public final <endif> func <currentRule.name>(
<if(first(args))>_ <endif><args; separator="," _">) throws -> <currentRule.ctxType> {
return try <currentRule.name>(0<currentRule.args:{a | , <a.name>}>)
}
@discardableResult
private func <currentRule.name>(_ _p<args:{a | , <a>}>: Int) throws -> <currentRule.ctxType> {
let _parentctx: ParserRuleContext? = _ctx
var _parentState: Int = getState()
var _localctx: <currentRule.ctxType> = <currentRule.ctxType>(_ctx, _parentState<currentRule.args:{a | ,
<a.name>}>)
var _prevctx: <currentRule.ctxType> = _localctx
var _startState: Int = <currentRule.startState>
try enterRecursionRule(_localctx, <currentRule.startState>, <parser.name>.RULE_<currentRule.name>, _p)
<namedActions.init>
<locals; separator="\n">
defer {
  <finallyAction>
  try! unrollRecursionContexts(_parentctx)
}
do {
<if(currentRule.hasLookaheadBlock)>
var _alt: Int
<endif>
<code>
<postamble; separator="\n">
<namedActions.after>
}
catch ANTLRException.recognition(let re) {
  _localctx.exception = re
  _errHandler.reportError(self, re)
  try _errHandler.recover(self, re)

```

```
}
```

```
return _localctx;
```

```
}
```

```
>>
```

```
CodeBlockForOuterMostAlt(currentOuterMostAltCodeBlock, locals, preamble, ops) ::= <<  
<if(currentOuterMostAltCodeBlock.altLabel)>_localctx = <currentOuterMostAltCodeBlock.altLabel;  
format="cap">Context(_localctx);<endif>  
try enterOuterAlt(_localctx, <currentOuterMostAltCodeBlock.alt.altNum>  
<CodeBlockForAlt(currentAltCodeBlock=currentOuterMostAltCodeBlock, ...)>  
>>
```

```
CodeBlockForAlt(currentAltCodeBlock, locals, preamble, ops) ::= <<  
<!/{!>  
<locals; separator="\n">  
<preamble; separator="\n">  
<ops; separator="\n">  
<!//{!>  
>>
```

```
LL1AltBlock(choice, preamble, alts, error) ::= <<  
setState(<choice.stateNumber>  
try _errHandler.sync(self)  
<if(choice.label)><labelref(choice.label)> = try _input.LT(1)<endif>  
<preamble; separator="\n">  
switch (<parser.name>.Tokens(rawValue: try _input.LA(1))!) {  
<choice.altLook,alts:{look,alt | <cases(ttypes=look)>  
<alt>  
break }; separator="\n">  
default:  
<error>  
}  
>>
```

```
LL1OptionalBlock(choice, alts, error) ::= <<  
setState(<choice.stateNumber>  
try _errHandler.sync(self)  
switch (<parser.name>.Tokens(rawValue: try _input.LA(1))!) {  
<choice.altLook,alts:{look,alt | <cases(ttypes=look)>  
<alt>  
break }; separator="\n">  
default:  
<error>  
}  
>>
```

```
LL1OptionalBlockSingleAlt(choice, expr, alts, preamble, error, followExpr) ::= <<
```

```

setState(<choice.stateNumber>)
try _errHandler.sync(self)
<preamble; separator="\n">
if (<expr>) {
  <alts; separator="\n">
}
<!else if ( !(<followExpr>) ) <error!>
>>

```

```

LL1StarBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
setState(<choice.stateNumber>)
try _errHandler.sync(self)
<preamble; separator="\n">
while (<loopExpr>) {
  <alts; separator="\n">
  setState(<choice.loopBackStateNumber>)
  try _errHandler.sync(self)
  <iteration>
}
>>

```

```

LL1PlusBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
setState(<choice.blockStartStateNumber>) <! alt block decision !>
try _errHandler.sync(self)
<preamble; separator="\n">
repeat {
  <alts; separator="\n">
  setState(<choice.stateNumber>); <! loopback/exit decision !>
  try _errHandler.sync(self)
  <iteration>
} while (<loopExpr>)
>>

```

```

// LL(*) stuff

```

```

AltBlock(choice, preamble, alts, error) ::= <<
setState(<choice.stateNumber>)
try _errHandler.sync(self)
<if(choice.label)><labelref(choice.label)> = try _input.LT(1)<endif>
<preamble; separator="\n">
switch(try getInterpreter().adaptivePredict(_input,<choice.decision>, _ctx)) {
  <alts:{alt |
case <i>:
  <alt>
  break }; separator="\n">
default: break
}
>>

```

```

OptionalBlock(choice, alts, error) ::= <<
setState(<choice.stateNumber>)
try _errHandler.sync(self)
switch (try getInterpreter().adaptivePredict(_input,<choice.decision>,_ctx)) {
<alts:{alt |
case <i><if(!choice.ast.greedy)>+1<endif>:
<alt>
break }; separator="\n">
default: break
}
>>

```

```

StarBlock(choice, alts, sync, iteration) ::= <<
setState(<choice.stateNumber>)
try _errHandler.sync(self)
_alt = try getInterpreter().adaptivePredict(_input,<choice.decision>,_ctx)
while (_alt != <choice.exitAlt> && _alt != ATN.INVALID_ALT_NUMBER) {
if ( _alt==1<if(!choice.ast.greedy)>+1<endif> ) {
<iteration>
<alts> <! should only be one !>
}
setState(<choice.loopBackStateNumber>)
try _errHandler.sync(self)
_alt = try getInterpreter().adaptivePredict(_input,<choice.decision>,_ctx)
}
>>

```

```

PlusBlock(choice, alts, error) ::= <<
setState(<choice.blockStartStateNumber>); <! alt block decision !>
try _errHandler.sync(self)
_alt = 1<if(!choice.ast.greedy)>+1<endif>;
repeat {
switch (_alt) {
<alts:{alt|
case <i><if(!choice.ast.greedy)>+1<endif>:
<alt>
break }; separator="\n">
default:
<error>
}
setState(<choice.loopBackStateNumber>); <! loopback/exit decision !>
try _errHandler.sync(self)
_alt = try getInterpreter().adaptivePredict(_input,<choice.decision>,_ctx)
} while (_alt != <choice.exitAlt> && _alt != ATN.INVALID_ALT_NUMBER)
>>

```

```

Sync(s) ::= "sync(<s.expecting.name>);"

```

```
ThrowNoViableAlt(t) ::= "throw try ANTLRException.recognition(e: NoViableAltException(self))"
```

```
TestSetInline(s) ::= <<
```

```
<!<s.bitsets:{bits | <if(rest(rest(bits.ttypes))>><bitsetBitfieldComparison(s, bits)><else><bitsetInlineComparison(s, bits)><endif>}; separator=" || ">!>
```

```
//closure
```

```
{ () -> Bool in
```

```
  <if(rest(s.bitsets))>var<else>let<endif> testSet: Bool = <first(s.bitsets):{bits | <if(rest(rest(bits.ttypes))>><bitsetBitfieldComparison(s, bits)><else><bitsetInlineComparison(s, bits)><endif>}>
```

```
  <rest(s.bitsets):{bits | testSet = testSet || <if(rest(rest(bits.ttypes))>><bitsetBitfieldComparison(s, bits)><else><bitsetInlineComparison(s, bits)><endif>}; separator="\n">
```

```
  return testSet
```

```
}()
```

```
>>
```

```
// Java language spec 15.19 - shift operators mask operands rather than overflow to 0... need range test
```

```
testShiftInRange(shiftAmount) ::= <<
```

```
((<shiftAmount>) & ~0x3f) == 0
```

```
>>
```

```
// produces smaller bytecode only when bits.ttypes contains more than two items
```

```
bitsetBitfieldComparison(s, bits) ::= <<
```

```
<!(<testShiftInRange({<offsetShift(s.varName, bits.shift)>})> && ((1 \<< <offsetShift(s.varName, bits.shift)>) & (<bits.ttypes:{ttype | (1 \<< <offsetShift(ttype, bits.shift)>}); separator=" | ">)) != 0)!>
```

```
{ () -> Bool in
```

```
  <! let test: Bool = (<testShiftInRange({<offsetShift(s.varName, bits.shift)>})>)!>
```

```
  <!var temp: Int64 = Int64(<offsetShift(s.varName, bits.shift)>)!>
```

```
  <!temp = (temp \< 0) ? (64 + (temp % 64)) : (temp % 64)!>
```

```
  <!let test1: Int64 = (Int64(1) \<< temp)!>
```

```
  <!var test2: Int64 = (<first(bits.ttypes):{ttype | Utils.bitLeftShift(<offsetShift(parserName(ttype), bits.shift)>)}>)!>
```

```
  <!<rest(bits.ttypes):{ttype | test2 = test2 | Utils.bitLeftShift(<offsetShift(parserName(ttype), bits.shift)>)}>};
```

```
separator="\n">!>
```

```
  let testArray: [Int] = [<s.varName>, <bits.ttypes:{ttype |<parserName(ttype)>}; separator=",">]
```

```
  <!var test2: Int64 = Utils.testBitLeftShiftArray(testArray)!>
```

```
  return Utils.testBitLeftShiftArray(testArray, <bits.shift>)
```

```
}()
```

```
>>
```

```
isZero ::= [
```

```
"0": true,
```

```
default: false
```

```
]
```

```
parserName(ttype) ::= <%
```

```
<parser.name>.Tokens.<ttype>.rawValue
```

```
%>
```

```
offsetShift(shiftAmount, offset) ::= <%
```

```
<if(!isZero.(offset))><shiftAmount> - <offset><else><shiftAmount><endif>
```

```

%>

// produces more efficient bytecode when bits.ttypes contains at most two items
bitsetInlineComparison(s, bits) ::= <%
<bits.ttypes:{ttype | <s.varName> == <parser.name>.Tokens.<ttype>.rawValue}; separator=" || ">
%>

cases(ttypes) ::= <<
<trunc(ttypes): {t | case .<t>:fallthrough} ; separator="\n">
<last(ttypes): {t | case .<t>:} ; separator="\n">
>>

InvokeRule(r, argExprsChunks) ::= <<
setState(<r.stateNumber>)
<if(r.labels)>
try {
  let assignmentValue = try
<r.name>(<if(r.ast.options.p)><r.ast.options.p><if(argExprsChunks)>,<endif><endif><argExprsChunks>)
  <r.labels:{l | <labelref(l)> = assignmentValue} ; separator="\n">
  }()
<else>try
<r.name>(<if(r.ast.options.p)><r.ast.options.p><if(argExprsChunks)>,<endif><endif><argExprsChunks>)<endif>
>>

MatchToken(m) ::= <<
setState(<m.stateNumber>)
<if(m.labels)>
try {
  let assignmentValue = try match(<parser.name>.Tokens.<m.name>.rawValue)
  <m.labels:{l | <labelref(l)> = assignmentValue} ; separator="\n">
  }()
<else>try match(<parser.name>.Tokens.<m.name>.rawValue)<endif>
>>

MatchSet(m, expr, capture) ::= "<CommonSetStuff(m, expr, capture, false)>"

MatchNotSet(m, expr, capture) ::= "<CommonSetStuff(m, expr, capture, true)>"

CommonSetStuff(m, expr, capture, invert) ::= <<
setState(<m.stateNumber>)
<if(m.labels)><m.labels:{l | <labelref(l)> = }>try _input.LT(1)<endif>
<capture>
if (<if(invert)><m.varName> \<= 0 || <else>!<endif>(<expr>)) {
  <if(m.labels)><m.labels:{l | <labelref(l)> = }><endif>try _errHandler.recoverInline(self)<if(m.labels)> as
  Token<endif>
}
else {
  _errHandler.reportMatch(self)
}

```

```

try consume()
}
>>

Wildcard(w) ::= <<
setState(<w.stateNumber>)
<if(w.labels)><w.labels:{1 | <labelref(l)> = }><endif>try matchWildcard();
>>

// ACTION STUFF

Action(a, foo, chunks) ::= "<chunks>"

ArgAction(a, chunks) ::= "<chunks>"

SemPred(p, chunks, failChunks) ::= <<
setState(<p.stateNumber>)
if (!(<chunks>)) {
    throw try ANTLRException.recognition(e:FailedPredicateException(self, <p.predicate><if(failChunks)>,
<failChunks><elseif(p.msg)>, <p.msg><endif>))
}
>>

ExceptionClause(e, catchArg, catchAction) ::= <<
catch (<catchArg>) {
    <catchAction>
}
>>

// lexer actions are not associated with model objects

LexerSkipCommand() ::= "skip()"
LexerMoreCommand() ::= "more()"
LexerPopModeCommand() ::= "popMode()"

LexerTypeCommand(arg)    ::= "_type = <arg>"
LexerChannelCommand(arg) ::= "_channel = <arg>"
LexerModeCommand(arg)   ::= "_mode = <arg>"
LexerPushModeCommand(arg) ::= "pushMode(<arg>)"

ActionText(t) ::= "<t.text>"
ActionTemplate(t) ::= "<t.st>"
ArgRef(a) ::= "_localctx.<a.name>"
LocalRef(a) ::= "_localctx.<a.name>"
RetValRef(a) ::= "_localctx.<a.name>"
QRetValRef(a) ::= "<ctx(a)>.<a.dict>.<a.name>"
/** How to translate $tokenLabel */
TokenRef(t) ::= "<ctx(t)>.<t.name>"

```



```

LabelRef(t) ::= "<ctx(t)>.<t.name>"
ListLabelRef(t) ::= "<ctx(t)>.<ListLabelName(t.name)>"
SetAttr(s,rhsChunks) ::= "<ctx(s)>.<s.name> = <rhsChunks>"

TokenLabelType() ::= "<file.TokenLabelType; null={Token}>"
InputSymbolType() ::= "<file.InputSymbolType; null={Token}>"

TokenPropertyRef_text(t) ::= "<ctx(t)>.<t.label> != nil ? <ctx(t)>.<t.label>!.getText()! : \"\""
TokenPropertyRef_type(t) ::= "<ctx(t)>.<t.label> != nil ? <ctx(t)>.<t.label>!.getType() : 0)"
TokenPropertyRef_line(t) ::= "<ctx(t)>.<t.label> != nil ? <ctx(t)>.<t.label>!.getLine() : 0)"
TokenPropertyRef_pos(t) ::= "<ctx(t)>.<t.label> != nil ? <ctx(t)>.<t.label>!.getCharPositionInLine() : 0)"
TokenPropertyRef_channel(t) ::= "<ctx(t)>.<t.label> != nil ? <ctx(t)>.<t.label>!.getChannel() : 0)"
TokenPropertyRef_index(t) ::= "<ctx(t)>.<t.label> != nil ? <ctx(t)>.<t.label>!.getTokenIndex() : 0)"
TokenPropertyRef_int(t) ::= "<ctx(t)>.<t.label> != nil ? Int(<ctx(t)>.<t.label>!.getText()!) : 0)"

RulePropertyRef_start(r) ::= "<ctx(r)>.<r.label> != nil ? (<ctx(r)>.<r.label>!.start?.description ?? \"\") : \"\""
RulePropertyRef_stop(r) ::= "<ctx(r)>.<r.label> != nil ? (<ctx(r)>.<r.label>!.stop?.description ?? \"\") : \"\""
RulePropertyRef_text(r) ::= "<ctx(r)>.<r.label> != nil ? try
_input.getText(<ctx(r)>.<r.label>!.start,<ctx(r)>.<r.label>!.stop) : \"\""
RulePropertyRef_ctx(r) ::= "<ctx(r)>.<r.label>"
RulePropertyRef_parser(r) ::= "self"

ThisRulePropertyRef_start(r) ::= "_localctx.start"
ThisRulePropertyRef_stop(r) ::= "_localctx.stop"
ThisRulePropertyRef_text(r) ::= "(try _input.getText(_localctx.start, try _input.LT(-1)))"
ThisRulePropertyRef_ctx(r) ::= "_localctx"
ThisRulePropertyRef_parser(r) ::= "self"

NonLocalAttrRef(s) ::= "((<s.ruleName; format=\"cap\">Context)getInvokingContext(<s.ruleIndex>)).<s.name>"
SetNonLocalAttr(s, rhsChunks) ::=
"((<s.ruleName; format=\"cap\">Context)getInvokingContext(<s.ruleIndex>)).<s.name> = <rhsChunks>"

AddToLabelList(a) ::= "<ctx(a.label)>.<a.listName>.append(<labelref(a.label)>)"

TokenDecl(t) ::= "<t.name>: <SwiftTypeMap.(TokenLabelType())>!"
TokenTypeDecl(t) ::= "var <t.name>: Int = 0"
TokenListDecl(t) ::= "<t.name>: Array<Token> = Array<Token>()"
RuleContextDecl(r) ::= "<r.name>: <r.ctxName>!"
RuleContextListDecl(rdecl) ::= "<rdecl.name>: Array<<rdecl.ctxName>> = Array<<rdecl.ctxName>>()"

ContextTokenGetterDecl(t) ::=
"open func <t.name>() -> TerminalNode? { return getToken(<parser.name>.Tokens.<t.name>.rawValue, 0) }"
ContextTokenListGetterDecl(t) ::=
"open func <t.name>() -> Array<TerminalNode> { return getTokens(<parser.name>.Tokens.<t.name>.rawValue)
}"
ContextTokenListIndexedGetterDecl(t) ::= <<
open func <t.name>(_ i:Int) -> TerminalNode?{
return getToken(<parser.name>.Tokens.<t.name>.rawValue, i)

```

```

}
>>
ContextRuleGetterDecl(r) ::= <<
open func <r.name>() -> <r.ctxName>? {
return getRuleContext(<r.ctxName>.self,0)
}
>>
ContextRuleListGetterDecl(r) ::= <<
open func <r.name>() -> Array<<r.ctxName>> {
return getRuleContexts(<r.ctxName>.self)
}
>>
ContextRuleListIndexedGetterDecl(r) ::= <<
open func <r.name>(_ i: Int) -> <r.ctxName>? {
return getRuleContext(<r.ctxName>.self,i)
}
>>

LexerRuleContext() ::= "RuleContext"

/** The rule context name is the rule followed by a suffix; e.g.,
* r becomes rContext.
*/
RuleContextNameSuffix() ::= "Context"

ImplicitTokenLabel(tokenName) ::= "_<tokenName>"
ImplicitRuleLabel(ruleName) ::= "_<ruleName>"
ImplicitSetLabel(id) ::= "_tset<id>"
ListLabelName(label) ::= "<label>"

CaptureNextToken(d) ::= "<d.varName> = try _input.LT(1)"
CaptureNextTokenType(d) ::= "<d.varName> = try _input.LA(1)"

StructDecl(struct,ctorAttrs,attrs, getters,dispatchMethods,interfaces,extensionMembers,
superClass={ParserRuleContext}) ::= <<
open class
<struct.name>:<if(contextSuperClass)><contextSuperClass><else>ParserRuleContext<endif><if(interfaces)>,
<interfaces; separator=", "><endif> {
<attrs:{a | public var <a>}; separator="\n">
<getters:{g | <g>}; separator="\n">
<! <if(ctorAttrs)>public init(_ parent: ParserRuleContext,_ invokingState: Int) { super.init(parent, invokingState)
}<endif> !>
<if(ctorAttrs)>
public convenience init(_ parent: ParserRuleContext?, _ invokingState: Int<ctorAttrs:{a | , _ <a>}>) {
self.init(parent, invokingState)
<struct.ctorAttrs:{a | self.<a.name> = <a.name>;}; separator="\n">
}
<endif>

```

```

open override func getRuleIndex() -> Int { return <parser.name>.RULE_<struct.derivedFromName> }
<if(struct.provideCopyFrom)> <! don't need copy unless we have subclasses !>
<!public init() { }!>
public func copyFrom(_ ctx: <struct.name>) {
    super.copyFrom(ctx)
    <struct.attrs:{ a | self.<a.name> = ctx.<a.name>; }; separator="\n">
}
<endif>
<dispatchMethods; separator="\n">
<extensionMembers; separator="\n">
}
>>

```

```

AltLabelStructDecl(struct,attrs, getters,dispatchMethods) ::= <<
public final class <struct.name>: <currentRule.name; format="cap">Context {
    <attrs:{ a | public var <a>; separator="\n">
    <getters:{ g | <g>; separator="\n">
    public init(_ ctx: <currentRule.name; format="cap">Context) {
        super.init()
        copyFrom(ctx)
    }
    <dispatchMethods; separator="\n">
}
>>

```

```

ListenerDispatchMethod(method) ::= <<
override
open func <if(method.isEnter)>enter<else>exit<endif>Rule(_ listener: ParseTreeListener) {
    if listener is <parser.grammarName>Listener {
        (listener as!
    <parser.grammarName>Listener).<if(method.isEnter)>enter<else>exit<endif><struct.derivedFromName;
    format="cap">(self)
    }
}
>>

```

```

VisitorDispatchMethod(method) ::= <<
override
open func accept<T>(_ visitor: ParseTreeVisitor<T>) -> T? {
    if visitor is <parser.grammarName>Visitor {
        return (visitor as! <parser.grammarName>Visitor<T>).visit<struct.derivedFromName; format="cap">(self)
    }else if visitor is <parser.grammarName>BaseVisitor {
        return (visitor as! <parser.grammarName>BaseVisitor<T>).visit<struct.derivedFromName; format="cap">(self)
    }
    else {
        return visitor.visitChildren(self)
    }
}
}
>>

```

>>

```
AttributeDecl(d) ::= "<d.name>: <SwiftTypeMap.(d.type)><if(d.initValue)> = <d.initValue><else>!<endif>"
```

```
/** If we don't know location of label def x, use this template (_localctx as! <x.ctx.name> */
```

```
labelref(x) ::= "<if(!x.isLocal)>_localctx.castdown(<x.ctx.name>.self).<endif><x.name>"
```

```
/** For any action chunk, what is correctly-typed context struct ptr? */
```

```
ctx(actionChunk) ::= "_localctx.castdown(<actionChunk.ctx.name>.self)"
```

```
// used for left-recursive rules
```

```
recRuleAltPredicate(ruleName,opPrec) ::= "precpred(_ctx, <opPrec>)"
```

```
recRuleSetReturnAction(src,name) ::= "$<name>=$<src>.<name>"
```

```
recRuleSetStopToken() ::= "_ctx!.stop = try _input.LT(-1)"
```

```
recRuleAltStartAction(ruleName, ctxName, label, isListLabel) ::= <<
```

```
_localctx = <ctxName>Context(_parentctx, _parentState);
```

```
<if(label)>
```

```
<if(isListLabel)>
```

```
_localctx.<label>.append(_prevctx)
```

```
<else>
```

```
_localctx.<label> = _prevctx
```

```
<endif>
```

```
<endif>
```

```
<if(label)>_localctx.<label> = _prevctx;<endif>
```

```
try pushNewRecursionContext(_localctx, _startState, <parser.name>.RULE_<ruleName>)
```

>>

```
recRuleLabeledAltStartAction(ruleName, currentAltLabel, label, isListLabel) ::= <<
```

```
_localctx = <currentAltLabel; format="cap">Context( <ruleName; format="cap">Context(_parentctx,  
_parentState))
```

```
<if(label)>
```

```
<if(isListLabel)>
```

```
(_localctx as! <currentAltLabel; format="cap">Context).<label>.append(_prevctx)
```

```
<else>
```

```
(_localctx as! <currentAltLabel; format="cap">Context).<label> = _prevctx
```

```
<endif>
```

```
<endif>
```

```
try pushNewRecursionContext(_localctx, _startState, <parser.name>.RULE_<ruleName>)
```

>>

```
recRuleReplaceContext(ctxName) ::= <<
```

```
_localctx = <ctxName>Context(_localctx)
```

```
_ctx = _localctx
```

```
_prevctx = _localctx
```

>>

```
recRuleSetPrevCtx() ::= <<
```

```

if _parseListeners != nil {
    try triggerExitRuleEvent()
}
_prevctx = _localctx
>>

```

```

LexerFile(lexerFile, lexer, namedActions) ::= <<
<fileHeader(lexerFile.grammarFileName, lexerFile.ANTLRVersion)>
<if(lexerFile.genPackage)>
<!package <lexerFile.genPackage>;!>
<endif>
<namedActions.header>
import Antlr4

<lexer>
>>

```

```

Lexer(lexer, atn, actionFuncs, sempredFuncs, superClass) ::= <<
open class <lexer.name>: <superClass; null="Lexer"> {
    internal static var _decisionToDFA: [DFA] = {
        var decisionToDFA = [DFA]()
        let length = <lexer.name>._ATN.getNumberOfDecisions()
        for i in 0..<length {
            <! decisionToDFA[i] = DFA(<lexer.name>._ATN.getDecisionState(i)!, i);!>
            decisionToDFA.append(DFA(<lexer.name>._ATN.getDecisionState(i)!, i))
        }
        return decisionToDFA
    }()
}()

```

```

internal static let _sharedContextCache: PredictionContextCache = PredictionContextCache()
public static let <lexer.tokens:{k | <k>=<lexer.tokens.(k)>}; separator=" ", wrap, anchor>
<if(lexer.channels)>
    public let <lexer.channels:{k | <k>=<lexer.channels.(k)>}; separator=" ", wrap, anchor>
<endif>
<rest(lexer.modes):{m | public static let <m>: Int = <i>;}; separator="\n">
public static let modeNames: [String] = [
    <lexer.modes:{m | "<m>"}; separator=" ", wrap, anchor>
]

```

```

public static let ruleNames: [String] = [
    <lexer.ruleNames:{r | "<r>"}; separator=" ", wrap, anchor>
]

```

```

<vocabulary(lexer.literalNames, lexer.symbolicNames)>

```

```

<namedActions.members>
open override func getVocabulary() -> Vocabulary {
    return <lexer.name>.VOCABULARY
}

```

```

}

public override init(_ input: CharStream) {
    RuntimeMetaData.checkVersion("<lexerFile.ANTLRVersion>", RuntimeMetaData.VERSION)
    super.init(input)
    _interp = LexerATNSimulator(self, <lexer.name>._ATN, <lexer.name>._decisionToDFA,
<lexer.name>._sharedContextCache)
}

override
open func getGrammarFileName() -> String { return "<lexer.grammarFileName>" }

override
open func getRuleNames() -> [String] { return <lexer.name>.ruleNames }

override
open func getSerializedATN() -> String { return <lexer.name>._serializedATN }

override
open func getModeNames() -> [String] { return <lexer.name>.modeNames }

override
open func getATN() -> ATN { return <lexer.name>._ATN }

<dumpActions(lexer, "", actionFuncs, sempredFuncs)>
<atn>
    public static let _serializedATN: String = <lexer.name>ATN().jsonString
    public static let _ATN: ATN = ATNDeserializer().deserializeFromJson(_serializedATN)
}
>>

/** Don't need to define anything. The tool generates a XParserATN.swift file (and same for lexer)
 * which is referenced from static field _serializedATN. This json string is passed to
 * deserializeFromJson(). Note this is not the "serialization as array of ints" that other targets
 * do. It is more or less the output of ATNPrinter which gets read back in.
 */
SerializedATN(model) ::= <<
>>

/** Using a type to init value map, try to init a type; if not in table
 * must be an object, default value is "null".
 */
initValue(typeName) ::= <<
<SwiftTypeInitMap.(typeName)>
>>

codeFileExtension() ::= ".swift"

```

Found in path(s):

\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/templates/codegen/Swift/Swift.stg

## 1.107 assertj-core 3.9.1

## 1.108 jackson-datatype-jdk8 2.14.1

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## 1.109 commons-logging 1.2

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jar/org/apache/commons/logging/LogFactory.java  
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jar/org/apache/commons/logging/impl/AvalonLogger.java  
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\* /opt/cola/permits/1135840457\_1613613080.13/0/commons-logging-1-1-sources-9-

```
jar/org/apache/commons/logging/LogConfigurationException.java
* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-
jar/org/apache/commons/logging/impl/Log4JLogger.java
* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-
jar/org/apache/commons/logging/impl/LogFactoryImpl.java
* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-
jar/org/apache/commons/logging/impl/Jdk13LumberjackLogger.java
* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-
jar/org/apache/commons/logging/impl/SimpleLog.java
* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-
jar/org/apache/commons/logging/impl/Jdk14Logger.java
* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-
jar/org/apache/commons/logging/LogSource.java
* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-
jar/org/apache/commons/logging/impl/NoOpLog.java
* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-
jar/org/apache/commons/logging/impl/LogKitLogger.java
* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-
jar/org/apache/commons/logging/Log.java
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jar/org/apache/commons/logging/impl/ServletContextCleaner.java
```

## 1.110 log4j-over-slf4j 1.7.32

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\* /opt/cola/permits/1198379913\_1630347367.42/0/log4j-over-slf4j-1-7-32-jar/META-INF/maven/org.slf4j/log4j-over-slf4j/pom.xml

# 1.111 slf4j 1.7.36

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# 1.112 jetty-security 9.4.51.v20230217

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\* org.eclipse.jetty.orbit:javax.security.auth.message

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\* org.eclipse.jetty.orbit:javax.mail.glassfish

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Oracle

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<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

\* javax.servlet:javax.servlet-api

\* javax.annotation:javax.annotation-api

\* javax.transaction:javax.transaction-api

\* javax.websocket:javax.websocket-api

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Oracle OpenJDK



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\* java.sun.security.ssl

These artifacts replace/modify OpenJDK classes. The modifications are hosted at github and both modified and original are under GPL v2 with classpath exceptions.

<http://openjdk.java.net/legal/gplv2+ce.html>

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OW2

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org.ow2.asm:asm-commons

org.ow2.asm:asm

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Apache

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org.apache.taglibs:taglibs-standard-spec

org.apache.taglibs:taglibs-standard-impl

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MortBay

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org.mortbay.jasper:apache-jsp

org.apache.tomcat:tomcat-jasper

org.apache.tomcat:tomcat-juli

org.apache.tomcat:tomcat-jsp-api

org.apache.tomcat:tomcat-el-api

org.apache.tomcat:tomcat-jasper-el

org.apache.tomcat:tomcat-api

org.apache.tomcat:tomcat-util-scan

org.apache.tomcat:tomcat-util

org.mortbay.jasper:apache-el  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-el-api

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Mortbay

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<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

org.eclipse.jetty.toolchain:jetty-schemas

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Assorted

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## 1.114 tap4j 4.1

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Found in path(s):

\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/util/package-info.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/util/StatusValues.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/producer/package-info.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/model/TestSet.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/representer/Tap13Representer.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/model/TestResult.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/model/TapResult.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/parser/Parser.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/representer/RepresenterException.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/parser/package-info.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/model/BailOut.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/util/DirectiveValues.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/consumer/TapConsumerException.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/consumer/TapConsumerFactory.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/model/AbstractTapElementDiagnostic.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/model/TapElement.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/model/SkipPlan.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/model/Footer.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/producer/TapProducer.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/model/Comment.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/model/Header.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/model/package-info.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/producer/Producer.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/representer/TapJunitRepresenter.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/consumer/package-info.java  
\* /opt/cola/permits/1613098593\_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/parser/Tap13Parser.java

```
* /opt/cola/permits/1613098593_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/parser/Memento.java
* /opt/cola/permits/1613098593_1679654363.3271081/0/tap4j-4-1-sources-2-
jar/org/tap4j/representer/DumperOptions.java
* /opt/cola/permits/1613098593_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/model/Plan.java
* /opt/cola/permits/1613098593_1679654363.3271081/0/tap4j-4-1-sources-2-
jar/org/tap4j/parser/ParserException.java
* /opt/cola/permits/1613098593_1679654363.3271081/0/tap4j-4-1-sources-2-
jar/org/tap4j/producer/ProducerException.java
* /opt/cola/permits/1613098593_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/representer/package-
info.java
* /opt/cola/permits/1613098593_1679654363.3271081/0/tap4j-4-1-sources-2-
jar/org/tap4j/representer/Representer.java
* /opt/cola/permits/1613098593_1679654363.3271081/0/tap4j-4-1-sources-2-
jar/org/tap4j/util/TapVersionValues.java
* /opt/cola/permits/1613098593_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/model/Text.java
* /opt/cola/permits/1613098593_1679654363.3271081/0/tap4j-4-1-sources-2-
jar/org/tap4j/producer/TapProducerFactory.java
* /opt/cola/permits/1613098593_1679654363.3271081/0/tap4j-4-1-sources-2-jar/org/tap4j/model/Directive.java
* /opt/cola/permits/1613098593_1679654363.3271081/0/tap4j-4-1-sources-2-
jar/org/tap4j/consumer/TapConsumerImpl.java
* /opt/cola/permits/1613098593_1679654363.3271081/0/tap4j-4-1-sources-2-
jar/org/tap4j/consumer/TapConsumer.java
```

## 1.115 jackson-module-parameter-names

### 2.15.0

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```
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```

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## 1.116 jackson-datatype-jsr310 2.15.0

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- \* org.eclipse.jetty.orbit:javax.security.auth.message

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- \* org.eclipse.jetty.orbit:javax.mail.glassfish

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- \* javax.annotation:javax.annotation-api
- \* javax.transaction:javax.transaction-api
- \* javax.websocket:javax.websocket-api

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org.apache.tomcat:tomcat-juli  
org.apache.tomcat:tomcat-jsp-api  
org.apache.tomcat:tomcat-el-api  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-api  
org.apache.tomcat:tomcat-util-scan  
org.apache.tomcat:tomcat-util

org.mortbay.jasper:apache-el  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-el-api

-----

Mortbay

The following artifacts are CDDL + GPLv2 with classpath exception.

<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

org.eclipse.jetty.toolchain:jetty-schemas

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Assorted

The UnixCrypt.java code implements the one way cryptography used by Unix systems for simple password protection. Copyright 1996 Aki Yoshida, modified April 2001 by Iris Van den Broeke, Daniel Deville.

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# 1.118 opentest4j 1.2.0

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 */
```

Found in path(s):

```
* /opt/cola/permits/1145468562_1616183623.24/0/opentest4j-1-2-0-sources-1-
jar/org/opentest4j/TestSkippedException.java
* /opt/cola/permits/1145468562_1616183623.24/0/opentest4j-1-2-0-sources-1-
jar/org/opentest4j/MultipleFailuresError.java
* /opt/cola/permits/1145468562_1616183623.24/0/opentest4j-1-2-0-sources-1-
jar/org/opentest4j/AssertionFailedError.java
* /opt/cola/permits/1145468562_1616183623.24/0/opentest4j-1-2-0-sources-1-
jar/org/opentest4j/IncompleteExecutionException.java
* /opt/cola/permits/1145468562_1616183623.24/0/opentest4j-1-2-0-sources-1-
jar/org/opentest4j/TestAbortedException.java
* /opt/cola/permits/1145468562_1616183623.24/0/opentest4j-1-2-0-sources-1-
jar/org/opentest4j/ValueWrapper.java
```

# 1.119 feign-core 8.15.1

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Found in path(s):

\* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/Types.java  
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Found in path(s):

\* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/SynchronousMethodHandler.java  
\* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/InvocationHandlerFactory.java  
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\* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/Param.java  
\* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/QueryMap.java

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\* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/codec/Decoder.java

\* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/codec/Encoder.java

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- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/RequestTemplate.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/auth/BasicAuthRequestInterceptor.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/RetryableException.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/ReflectiveFeign.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/codec/ErrorDecoder.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/Logger.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/Request.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/codec/EncodingException.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/codec/StringDecoder.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/Retryer.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/codec/DecodeException.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/Util.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/auth/Base64.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/FeignException.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/Client.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/MethodMetadata.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/Response.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/Feign.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/RequestInterceptor.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/Contract.java
- \* /opt/ws\_local/PERMITS\_SQL/1041687624\_1590960580.15/0/feign-core-8-15-1-sources-jar/feign/Target.java

## 1.120 netty-codec-http 4.1.93.Final

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- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/websocketx/PingWebSocketFrame.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/DefaultHttpMessage.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/HttpMethod.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/DefaultHttpRequest.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/multipart/HttpData.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/HttpResponseEncoder.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/HttpRequest.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/websocketx/package-info.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/rtsp/RtspResponseEncoder.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/HttpClientCodec.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/DefaultHttpHeaders.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/websocketx/WebSocket00FrameEncoder.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/multipart/MemoryAttribute.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/multipart/package-info.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/multipart/AbstractDiskHttpData.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/HttpContentEncoder.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/websocketx/WebSocketClientHandshakerFactory.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/multipart/HttpPostRequestDecoder.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-

jar/io/netty/handler/codec/http/CookieDecoder.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/HttpContentDecompressor.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/HttpVersion.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/websocketx/WebSocketClientHandshaker00.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/multipart/HttpDataFactory.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/spdy/SpdyHttpEncoder.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/rtsp/RtspRequestDecoder.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/HttpObjectAggregator.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/DefaultCookie.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/multipart/InternalAttribute.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/package-info.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/multipart/InterfaceHttpPostRequestDecoder.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/spdy/SpdyHttpResponseStreamIdHandler.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/websocketx/WebSocketHandshakeException.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/multipart/DiskFileUpload.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/HttpHeaders.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/HttpConstants.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/HttpResponseDecoder.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/websocketx/TextWebSocketFrame.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/rtsp/RtspObjectDecoder.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/HttpResponse.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/multipart/FileUpload.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/multipart/HttpPostMultipartRequestDecoder.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/spdy/SpdySession.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-

jar/io/netty/handler/codec/http/multipart/AbstractHttpData.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/QueryStringDecoder.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/HttpObject.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/HttpContent.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/rtsp/RtspResponseDecoder.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/multipart/MixedAttribute.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/rtsp/RtspMethods.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/rtsp/package-info.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/multipart/MixedFileUpload.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
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\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/websocketx/PongWebSocketFrame.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/rtsp/RtspResponseStatuses.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/DefaultLastHttpContent.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/websocketx/WebSocketClientHandshaker07.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/websocketx/WebSocketClientHandshaker.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/websocketx/WebSocketUtil.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/websocketx/WebSocketFrame.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/spdy/SpdyHttpHeaders.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/HttpObjectDecoder.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/multipart/HttpPostBodyUtil.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/websocketx/BinaryWebSocketFrame.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/HttpContentCompressor.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/HTTPHeaderDateFormat.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/multipart/DefaultHttpDataFactory.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-

jar/io/netty/handler/codec/http/multipart/CaseIgnoringComparator.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/websocketx/WebSocketClientHandshaker13.java  
\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-  
jar/io/netty/handler/codec/http/HttpRequestEncoder.java  
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jar/io/netty/handler/codec/spdy/DefaultSpdySettingsFrame.java  
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jar/io/netty/handler/codec/http/multipart/HttpPostStandardRequestDecoder.java  
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jar/io/netty/handler/codec/http/cookie/package-info.java  
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jar/io/netty/handler/codec/spdy/SpdySettingsFrame.java  
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jar/io/netty/handler/codec/spdy/SpdyPingFrame.java  
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jar/io/netty/handler/codec/http/websocketx/extensions/WebSocketExtensionFilter.java  
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\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/HttpServerKeepAliveHandler.java

\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/websocketx/WebSocketChunkedInput.java

\* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/multipart/FileUploadUtil.java

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- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/websocketx/WebSocketClientHandshakeException.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/multipart/DeleteFileOnExitHook.java
- \* /opt/cola/permits/1698848030\_1685285723.526563/0/netty-codec-http-4-1-93-final-sources-jar/io/netty/handler/codec/http/websocketx/WebSocketServerHandshakeException.java

## 1.121 jackson-dataformat-smile 2.15.0

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# Jackson JSON processor

Jackson is a high-performance, Free/Open Source JSON processing library. It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has been in development since 2007.

It is currently developed by a community of developers.

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## 1.122 zstd 1.5.5

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## 1.123 groovy-testng 3.0.9

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```
* /opt/cola/permits/1551849313_1675381051.4035022/0/groovy-testng-3-0-9-sources-1-
jar/org/codehaus/groovy/testng/TestNgRunner.java
* /opt/cola/permits/1551849313_1675381051.4035022/0/groovy-testng-3-0-9-sources-1-
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```

org.apache.groovy.plugin.testng.TestNgRunner

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```
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- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/slurpersupport/package.html
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/dom/package.html
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/slurpersupport/package.html

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- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/markupsupport/DoubleQuoteFilter.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/markupsupport/StandardControlToUndefined.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/slurpersupport/FilteredAttributes.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/XmlParserFactory.groovy
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/streamingmarkupsupport/Builder.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/slurpersupport/NodeChild.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/slurpersupport/FilteredNodeChildren.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/NamespaceBuilder.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/slurpersupport/Attribute.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/org/apache/groovy/xml/tools/DomToGroovy.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/slurpersupport/NodeIterator.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/slurpersupport/NoChildren.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/markupsupport/StandardXmlAttributeFilter.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/XmlSlurper.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/markupsupport/SurrogateToUndefined.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/StreamingSAXBuilder.groovy
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/DOMBuilder.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/slurpersupport/Node.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/FactorySupport.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/markupsupport/SingleQuoteFilter.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/Namespace.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/slurpersupport/Attribute.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/SAXBuilder.java
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/StaxBuilder.groovy
- \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/slurpersupport/NodeChild.java

\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/XmlUtil.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/slurpersupport/Attributes.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/NamespaceBuilderSupport.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/XmlNodePrinter.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/slurpersupport/NamespaceAwareHashMap.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/XmlSlurperFactory.groovy  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/markupsupport/StandardXmlFilter.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/slurpersupport/NodeChildren.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/XmlSlurper.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/slurpersupport/GPathResult.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/slurpersupport/ReplacementNode.java  
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\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/XmlNodePrinter.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/slurpersupport/NamespaceAwareHashMap.java  
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\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/XmlParser.java  
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\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/streamingmarkupsupport/StreamingMarkupWriter.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/slurpersupport/NodeChildren.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/MarkupBuilderHelper.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/slurpersupport/GPathResult.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/slurpersupport/ReplacementNode.java

\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/MarkupBuilder.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/org/codehaus/groovy/tools/xml/DomToGroovy.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/slurpersupport/FilteredNodeChildren.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/Entity.groovy  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/streamingmarkupsupport/AbstractStreamingBuilder.groovy  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/StreamingMarkupBuilder.groovy  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/XmlUtil.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/org/apache/groovy/xml/extensions/XmlExtensions.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/slurpersupport/NoChildren.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/slurpersupport/Attributes.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/org/codehaus/groovy/runtime/XmlGroovyMethods.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/slurpersupport/Node.java  
\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/markupsupport/AllControlToUndefined.java

# 1.125 javaip 0.17

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# 1.126 javax-el 3.0.0

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## 1.129 protobuf-java 3.22.5

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Found in path(s):

```
* /opt/cola/permits/1720055189_1686654514.924605/0/protobuf-java-3-22-5-jar/google/protobuf/timestamp.proto  
* /opt/cola/permits/1720055189_1686654514.924605/0/protobuf-java-3-22-5-jar/google/protobuf/type.proto  
* /opt/cola/permits/1720055189_1686654514.924605/0/protobuf-java-3-22-5-jar/google/protobuf/any.proto  
* /opt/cola/permits/1720055189_1686654514.924605/0/protobuf-java-3-22-5-jar/google/protobuf/struct.proto  
* /opt/cola/permits/1720055189_1686654514.924605/0/protobuf-java-3-22-5-jar/google/protobuf/field_mask.proto  
* /opt/cola/permits/1720055189_1686654514.924605/0/protobuf-java-3-22-5-jar/google/protobuf/empty.proto  
* /opt/cola/permits/1720055189_1686654514.924605/0/protobuf-java-3-22-5-jar/google/protobuf/source_context.proto  
* /opt/cola/permits/1720055189_1686654514.924605/0/protobuf-java-3-22-5-jar/google/protobuf/duration.proto  
* /opt/cola/permits/1720055189_1686654514.924605/0/protobuf-java-3-22-5-jar/google/protobuf/descriptor.proto  
* /opt/cola/permits/1720055189_1686654514.924605/0/protobuf-java-3-22-5-jar/google/protobuf/wrappers.proto  
* /opt/cola/permits/1720055189_1686654514.924605/0/protobuf-java-3-22-5-jar/google/protobuf/api.proto
```

# 1.130 commons-configuration 1.8

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# 1.131 jsr305 3.0.1

## 1.132 snake-yaml 2.0

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 */
```

Found in path(s):

```
* /opt/cola/permits/1584157893_1677999786.1262538/0/snakeyaml-2-0-sources-
jar/org/yaml/snakeyaml/representer/SafeRepresenter.java
* /opt/cola/permits/1584157893_1677999786.1262538/0/snakeyaml-2-0-sources-
jar/org/yaml/snakeyaml/parser/Parser.java
* /opt/cola/permits/1584157893_1677999786.1262538/0/snakeyaml-2-0-sources-
jar/org/yaml/snakeyaml/env/EnvScalarConstructor.java
* /opt/cola/permits/1584157893_1677999786.1262538/0/snakeyaml-2-0-sources-
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* /opt/cola/permits/1584157893_1677999786.1262538/0/snakeyaml-2-0-sources-
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* /opt/cola/permits/1584157893_1677999786.1262538/0/snakeyaml-2-0-sources-
jar/org/yaml/snakeyaml/events/StreamEndEvent.java
* /opt/cola/permits/1584157893_1677999786.1262538/0/snakeyaml-2-0-sources-
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* /opt/cola/permits/1584157893_1677999786.1262538/0/snakeyaml-2-0-sources-
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* /opt/cola/permits/1584157893_1677999786.1262538/0/snakeyaml-2-0-sources-
jar/org/yaml/snakeyaml/emitter/ScalarAnalysis.java
* /opt/cola/permits/1584157893_1677999786.1262538/0/snakeyaml-2-0-sources-
jar/org/yaml/snakeyaml/events/AliasEvent.java
* /opt/cola/permits/1584157893_1677999786.1262538/0/snakeyaml-2-0-sources-
```

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\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-  
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\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-  
jar/org/yaml/snakeyaml/events/CommentEvent.java  
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\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-  
jar/org/yaml/snakeyaml/tokens/FlowSequenceEndToken.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-  
jar/org/yaml/snakeyaml/nodes/AnchorNode.java  
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jar/org/yaml/snakeyaml/representer/Represent.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-  
jar/org/yaml/snakeyaml/nodes/Node.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-  
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\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-  
jar/org/yaml/snakeyaml/parser/VersionTagsTuple.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/Yaml.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-  
jar/org/yaml/snakeyaml/inspector/UnTrustedTagInspector.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-  
jar/org/yaml/snakeyaml/parser/ParserException.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/error/MarkedYAMLEException.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/representer/Representer.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/nodes/NodeTuple.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/inspector/TrustedTagInspector.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/serializer/Serializer.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/emitter/EmitterException.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/introspector/FieldProperty.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/introspector/BeanAccess.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/comments/CommentLine.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/LoaderOptions.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/CommentToken.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/extensions/compactnotation/PackageCompactConstructor.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/inspector/TrustedPrefixesTagInspector.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/BlockEndToken.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/serializer/SerializerException.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/error/Mark.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/util/ArrayUtils.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/error/YAMLEException.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/events/DocumentEndEvent.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/emitter/Emitter.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/events/MappingEndEvent.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/util/ArrayStack.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/util/EnumUtils.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/TypeDescription.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/scanner/ScannerException.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/FlowSequenceStartToken.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/nodes/SequenceNode.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/resolver/Resolver.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/inspector/TagInspector.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/constructor/Constructor.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/scanner/SimpleKey.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/events/DocumentStartEvent.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/FlowEntryToken.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/comments/CommentEventsCollector.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/TagToken.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/Token.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/serializer/NumberAnchorGenerator.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/AnchorToken.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/error/MissingEnvironmentVariableException.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/constructor/BaseConstructor.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/StreamEndToken.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/composer/Composer.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/extensions/compactnotation/CompactData.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/introspector/PropertyUtils.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/nodes/Tag.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/events/NodeEvent.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/introspector/PropertySubstitute.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/reader/StreamReader.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/internal/Logger.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/events/MappingStartEvent.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/scanner/ScannerImpl.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/KeyToken.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/TagTuple.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/BlockEntryToken.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/introspector/MissingProperty.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/events/Event.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/constructor/DuplicateKeyException.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/extensions/compactnotation/CompactConstructor.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/comments/CommentType.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/introspector/GenericProperty.java

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\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/META-INF/maven/org.yaml/snakeyaml/pom.xml

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```
* /opt/cola/permits/1584157893_1677999786.1262538/0/snakeyaml-2-0-sources-
jar/org/yaml/snakeyaml/external/com/google/gdata/util/common/base/Escaper.java
* /opt/cola/permits/1584157893_1677999786.1262538/0/snakeyaml-2-0-sources-
jar/org/yaml/snakeyaml/external/com/google/gdata/util/common/base/PercentEscaper.java
* /opt/cola/permits/1584157893_1677999786.1262538/0/snakeyaml-2-0-sources-
jar/org/yaml/snakeyaml/external/com/google/gdata/util/common/base/UnicodeEscaper.java
```

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/**
 * A Base64 encoder/decoder.
 *
 * <p>
 * This class is used to encode and decode data in Base64 format as described in RFC 1521.
 *
 * <p>
 * Project home page: <a href="http://www.source-code.biz/base64coder/java/">www.
 * source-code.biz/base64coder/java</a><br>
 * Author: Christian d'Heureuse, Inventec Informatik AG, Zurich, Switzerland<br>
 * Multi-licensed: EPL / LGPL / GPL / AL / BSD.
 */
```

Found in path(s):

```
* /opt/cola/permits/1584157893_1677999786.1262538/0/snakeyaml-2-0-sources-
jar/org/yaml/snakeyaml/external/biz/base64Coder/Base64Coder.java
```

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## 1.133 groovy-datetime 3.0.9

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```
* /opt/cola/permits/1268277769_1644386391.06/0/groovy-datetime-3-0-9-sources-
jar/org/apache/groovy/datetime/extensions/DateTimeExtensions.java
* /opt/cola/permits/1268277769_1644386391.06/0/groovy-datetime-3-0-9-sources-
jar/org/apache/groovy/datetime/extensions/DateTimeStaticExtensions.java
```

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\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/META-INF/maven/io.netty/netty-codec-redis/pom.xml

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\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/AbstractStringRedisMessage.java

\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/DefaultLastBulkStringRedisContent.java

\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/DefaultBulkStringRedisContent.java

\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/ArrayHeaderRedisMessage.java

\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/IntegerRedisMessage.java

\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/FullBulkStringRedisMessage.java

\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/RedisCodecException.java

\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/package-info.java

\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/RedisEncoder.java

\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/RedisMessage.java

\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/RedisArrayAggregator.java

\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/RedisDecoder.java  
\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/ErrorMessage.java  
\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/BulkStringRedisContent.java  
\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/SimpleStringRedisMessage.java  
\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/BulkStringHeaderRedisMessage.java  
\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/RedisMessagePool.java  
\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/RedisConstants.java  
\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/RedisBulkStringAggregator.java  
\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/FixedRedisMessagePool.java  
\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/ArrayRedisMessage.java  
\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/LastBulkStringRedisContent.java  
\* /opt/cola/permits/1698848044\_1685285757.6811302/0/netty-codec-redis-4-1-93-final-sources-jar/io/netty/handler/codec/redis/RedisMessageType.java

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# 1.135 okhttp 2.7.5

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## 1.136 groovy 3.0.9

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# Listed below are default groovy source file extensions.

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groovy

Found in path(s):

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/META-INF/groovy/org.codehaus.groovy.source.Extensions

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# global transformation to handle @Grab annotation

groovy.grape.GrabAnnotationTransformation

Found in path(s):

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/META-INF/services/org.codehaus.groovy.transform.ASTTransformation

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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/expr/package.html
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/package.html
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/control/io/package.html
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/tools/xml/package.html
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/typehandling/package.html
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/stmt/package.html
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/package.html
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/tools/javac/package.html
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/package.html
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/treewalker/package.html
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/syntax/package.html
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/package.html
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/wrappers/package.html
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/grape/defaultGrapeConfig.xml
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-

jar/org/codehaus/groovy/runtime/metaclass/package.html  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/classgen/asm/package.html  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/overview.html  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/vmplugin/package.html  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/reflection/package.html  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/package.html  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/io/package.html  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/overviewj.html  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/package.html  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/control/messages/package.html  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/inspect/package.html  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/security/package.html  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/control/package.html  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/time/package.html  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/runtime/package.html  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/tools/package.html  
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jar/org/apache/groovy/util/concurrent/concurrentlinkedhashmap/package-info.java

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jar/org/apache/groovy/util/concurrent/concurrentlinkedhashmap/LinkedDeque.java

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jar/org/apache/groovy/util/concurrent/concurrentlinkedhashmap/EntryWeigher.java  
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/\*\* JSR-241 Groovy Recognizer.

\*  
\* Run 'java Main [-showtree] directory-full-of-groovy-files'  
\*  
\* [The -showtree option pops up a Swing frame that shows  
\* the AST constructed from the parser.]  
\*  
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\*     Reto Kleeb     rkleeb@hsr.ch  
\*  
\* Version 1.00 December 9, 1997 -- initial release  
\* Version 1.01 December 10, 1997  
\*     fixed bug in octal def (0..7 not 0..8)  
\* Version 1.10 August 1998 (parrt)

- \* added tree construction
- \* fixed definition of WS,comments for mac,pc,unix newlines
- \* added unary plus
- \* Version 1.11 (Nov 20, 1998)
  - \* Added "shutup" option to turn off last ambig warning.
  - \* Fixed inner class def to allow named class defs as statements
  - \* synchronized requires compound not simple statement
  - \* add [] after builtInType DOT class in primaryExpression
  - \* "const" is reserved but not valid..removed from modifiers
- \* Version 1.12 (Feb 2, 1999)
  - \* Changed LITERAL\_XXX to xxx in tree grammar.
  - \* Updated java.g to use tokens {...} now for 2.6.0 (new feature).
  - \*
- \* Version 1.13 (Apr 23, 1999)
  - \* Didn't have (stat)? for else clause in tree parser.
  - \* Didn't gen ASTs for interface extends. Updated tree parser too.
  - \* Updated to 2.6.0.
- \* Version 1.14 (Jun 20, 1999)
  - \* Allowed final/abstract on local classes.
  - \* Removed local interfaces from methods
  - \* Put instanceof precedence where it belongs...in relationalExpr
    - \* It also had expr not type as arg; fixed it.
  - \* Missing ! on SEMI in classBlock
  - \* fixed: (expr) + "string" was parsed incorrectly (+ as unary plus).
  - \* fixed: didn't like Object[].class in parser or tree parser
- \* Version 1.15 (Jun 26, 1999)
  - \* Screwed up rule with instanceof in it. :( Fixed.
  - \* Tree parser didn't like (expr).something; fixed.
  - \* Allowed multiple inheritance in tree grammar. oops.
- \* Version 1.16 (August 22, 1999)
  - \* Extending an interface built a wacky tree: had extra EXTENDS.
  - \* Tree grammar didn't allow multiple superinterfaces.
  - \* Tree grammar didn't allow empty var initializer: { }
- \* Version 1.17 (October 12, 1999)
  - \* ESC lexer rule allowed 399 max not 377 max.
  - \* java.tree.g didn't handle the expression of synchronized statements.
- \* Version 1.18 (August 12, 2001)
  - \* Terence updated to Java 2 Version 1.3 by observing/combining work of Allan Jacobs and Steve Messick. Handles 1.3 src. Summary:
    - \* o primary didn't include boolean.class kind of thing
    - \* o constructor calls parsed explicitly now:
      - \* see explicitConstructorInvocation
    - \* o add strictfp modifier
    - \* o missing objBlock after new expression in tree grammar
    - \* o merged local class definition alternatives, moved after declaration
    - \* o fixed problem with ClassName.super.field

- \* o reordered some alternatives to make things more efficient
- \* o long and double constants were not differentiated from int/float
- \* o whitespace rule was inefficient: matched only one char
- \* o add an examples directory with some nasty 1.3 cases
- \* o made Main.java use buffered IO and a Reader for Unicode support
- \* o supports UNICODE?
- \* Using Unicode charVocabulary makes code file big, but only
- \* in the bitsets at the end. I need to make ANTLR generate
- \* unicode bitsets more efficiently.
- \* Version 1.19 (April 25, 2002)
- \* Terence added in nice fixes by John Pybus concerning floating
- \* constants and problems with super() calls. John did a nice
- \* reorg of the primary/postfix expression stuff to read better
- \* and makes f.g.super() parse properly (it was METHOD\_CALL not
- \* a SUPER\_CTOR\_CALL). Also:
- \* o "finally" clause was a root...made it a child of "try"
- \* o Added stuff for asserts too for Java 1.4, but \*commented out\*
- \* as it is not backward compatible.
- \* Version 1.20 (October 27, 2002)
- \* Terence ended up reorging John Pybus' stuff to
- \* remove some nondeterminisms and some syntactic predicates.
- \* Note that the grammar is stricter now; e.g., this(...) must
- \* be the first statement.
- \* Trinary ?: operator wasn't working as array name:
- \* (isBig ? bigDigits : digits)[i];
- \* Checked parser/tree parser on source for
- \* Resin-2.0.5, jive-2.1.1, jdk 1.3.1, Lucene, antlr 2.7.2a4,
- \* and the 110k-line jGuru server source.
- \* Version 1.21 (October 17, 2003)
- \* Fixed lots of problems including:
- \* Ray Waldin: add typeDefinition to interfaceBlock in java.tree.g
- \* He found a problem/fix with floating point that start with 0
- \* Ray also fixed problem that (int.class) was not recognized.
- \* Thorsten van Ellen noticed that \n are allowed incorrectly in strings.
- \* TJP fixed CHAR\_LITERAL analogously.
- \* Version 1.21.2 (March, 2003)
- \* Changes by Matt Quail to support generics (as per JDK1.5/JSR14)
- \* Notes:
- \* o We only allow the "extends" keyword and not the "implements"
- \* keyword, since that's what JSR14 seems to imply.
- \* o Thanks to Monty Zukowski for his help on the antlr-interest



- \* mail list.
- \* o Thanks to Alan Eliassen for testing the grammar over his
- \* Fink source base
- \*
- \* Version 1.22 (July, 2004)
- \* Changes by Michael Studman to support Java 1.5 language extensions
- \* Notes:
- \* o Added support for annotations types
- \* o Finished off Matt Quail's generics enhancements to support bound type arguments
- \* o Added support for new for statement syntax
- \* o Added support for static import syntax
- \* o Added support for enum types
- \* o Tested against JDK 1.5 source base and source base of jdigraph project
- \* o Thanks to Matt Quail for doing the hard part by doing most of the generics work
- \*
- \* Version 1.22.1 (July 28, 2004)
- \* Bug/omission fixes for Java 1.5 language support
- \* o Fixed tree structure bug with classOrInterface - thanks to Pieter Vangorpto for spotting this
- \* o Fixed bug where incorrect handling of SR and BSR tokens would cause type parameters to be recognised as type arguments.
- \* o Enabled type parameters on constructors, annotations on enum constants and package definitions
- \* o Fixed problems when parsing `if ((char.class.equals(c))) {}` - solution by Matt Quail at Cenqua
- \*
- \* Version 1.22.2 (July 28, 2004)
- \* Slight refactoring of Java 1.5 language support
- \* o Refactored for/"foreach" productions so that original literal "for" literal is still used but the for sub-clauses vary by token type
- \* o Fixed bug where type parameter was not included in generic constructor's branch of AST
- \*
- \* Version 1.22.3 (August 26, 2004)
- \* Bug fixes as identified by Michael Stahl; clean up of tabs/spaces and other refactorings
- \* o Fixed typeParameters omission in identPrimary and newStatement
- \* o Replaced GT reconciliation code with simple semantic predicate
- \* o Adapted enum/assert keyword checking support from Michael Stahl's java15 grammar
- \* o Refactored typeDefinition production and field productions to reduce duplication
- \*
- \* Version 1.22.4 (October 21, 2004)
- \* Small bux fixes
- \* o Added typeArguments to explicitConstructorInvocation, e.g. `new <String>MyParameterised()`
- \* o Added typeArguments to postfixExpression productions for anonymous inner class super constructor invocation, e.g. `new Outer().<String>super()`
- \* o Fixed bug in array declarations identified by Geoff Roy
- \*
- \* Version 1.22.4.g.1
- \* o I have taken java.g for Java 1.5 from Michael Studman (1.22.4)

- \* and have applied the groovy.diff from java.g (1.22) by John Rose
- \* back onto the new root (1.22.4) - Jeremy Rayner (Jan 2005)
- \*
- \* Version 1.22.4.g.2
- \* o mkempf, rkleeb, Dec 2007
- \* o fixed various rules so that they call the correct Create Method
- \* to make sure that the line information are correct
- \*
- \* Based on an original grammar released in the PUBLIC DOMAIN
- \*/

Found in path(s):

- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/parser/GroovyRecognizer.java

No license file was found, but licenses were detected in source scan.

- /\*
- \* This file is adapted from the Antlr4 Java grammar which has the following license
- \*
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- \*/

- /\*\*
- \* The Groovy grammar is based on the official grammar for Java:
- \* <https://github.com/antlr/grammars-v4/blob/master/java/Java.g4>

```

*/
parser grammar GroovyParser;

options {
    tokenVocab = GroovyLexer;
    contextSuperClass = GroovyParserRuleContext;
    superClass = AbstractParser;
}

@header {
    import java.util.Map;
    import org.codehaus.groovy.ast.NodeMetaDataHandler;
}

@members {

    public static class GroovyParserRuleContext extends ParserRuleContext implements NodeMetaDataHandler {
        private Map metaDataMap = null;

        public GroovyParserRuleContext() {}

        public GroovyParserRuleContext(ParserRuleContext parent, int invokingStateNumber) {
            super(parent, invokingStateNumber);
        }

        @Override
        public Map<?, ?> getMetaDataMap() {
            return this.metaDataMap;
        }

        @Override
        public void setMetaDataMap(Map<?, ?> metaDataMap) {
            this.metaDataMap = metaDataMap;
        }

        @Override
        public int getSyntaxErrorSource() {
            return GroovySyntaxError.PARSER;
        }

        @Override
        public int getErrorLine() {
            Token token = _input.LT(-1);

            if (null == token) {
                return -1;
            }
        }
    }
}

```

```

    return token.getLine();
}

@Override
public int getErrorColumn() {
    Token token = _input.LT(-1);

    if (null == token) {
        return -1;
    }

    return token.getCharPositionInLine() + 1 + token.getText().length();
}
}

// starting point for parsing a groovy file
compilationUnit
: nls (packageDeclaration sep)? scriptStatements? EOF
;

scriptStatements
: scriptStatement (sep scriptStatement)* sep?
;

scriptStatement
: importDeclaration // Import statement. Can be used in any scope. Has "import x as y" also.
| typeDeclaration
// validate the method in the AstBuilder#visitMethodDeclaration, e.g. method without method body is not allowed
| { !SemanticPredicates.isInvalidMethodDeclaration(_input) }?
methodDeclaration[3, 9]
| statement
;

packageDeclaration
: annotationsOpt PACKAGE qualifiedName
;

importDeclaration
: annotationsOpt IMPORT STATIC? qualifiedName (DOT MUL | AS alias=identifier)?
;

typeDeclaration
: classOrInterfaceModifiersOpt classDeclaration
;

modifier

```

```

: classOrInterfaceModifier
| m=( NATIVE
  | SYNCHRONIZED
  | TRANSIENT
  | VOLATILE
  | DEF
  | VAR
  )
;

modifiersOpt
: (modifiers nls)?
;

modifiers
: modifier (nls modifier)*
;

classOrInterfaceModifiersOpt
: (classOrInterfaceModifiers
  NL* /* Use `NL*` here for better performance, so DON'T replace it with `nls` */
)?
;

classOrInterfaceModifiers
: classOrInterfaceModifier (nls classOrInterfaceModifier)*
;

classOrInterfaceModifier
: annotation // class or interface
| m=( PUBLIC // class or interface
  | PROTECTED // class or interface
  | PRIVATE // class or interface
  | STATIC // class or interface
  | ABSTRACT // class or interface
  | FINAL // class only -- does not apply to interfaces
  | STRICTFP // class or interface
  | DEFAULT // interface only -- does not apply to classes
  )
;

variableModifier
: annotation
| m=( FINAL
  | DEF
  | VAR
  // Groovy supports declaring local variables as instance/class fields,
  // e.g. import groovy.transform.*; @Field static List awe = [1, 2, 3]

```

```
// e.g. import groovy.transform.*; def a = { @Field public List awe = [1, 2, 3] }
// Notice: Groovy 2.4.7 just allows to declare local variables with the following modifiers when using
annotations(e.g. @Field)
// TODO check whether the following modifiers accompany annotations or not. Because the legacy codes(e.g.
benchmark/bench/heapsort.groovy) allow to declare the special instance/class fields without annotations, we leave it
as it is for the time being
```

```
| PUBLIC
| PROTECTED
| PRIVATE
| STATIC
| ABSTRACT
| STRICTFP
)
```

```
;
```

```
variableModifiersOpt
```

```
: (variableModifiers nls)?
;
```

```
variableModifiers
```

```
: variableModifier (nls variableModifier)*
;
```

```
typeParameters
```

```
: LT nls typeParameter (COMMA nls typeParameter)* nls GT
;
```

```
typeParameter
```

```
: className (EXTENDS nls typeBound)?
;
```

```
typeBound
```

```
: type (BITAND nls type)*
;
```

```
typeList
```

```
: type (COMMA nls type)*
;
```

```
/**
```

```
* t 0: class; 1: interface; 2: enum; 3: annotation; 4: trait
```

```
*/
```

```
classDeclaration
```

```
locals[ int t ]
```

```
: ( CLASS { $t = 0; }
| INTERFACE { $t = 1; }
| ENUM { $t = 2; }
```

```

| AT INTERFACE { $t = 3; }
| TRAIT { $t = 4; }
)
identifier
(nls typeParameters)?
(nls EXTENDS nls scs=typeList)?
(nls IMPLEMENTS nls is=typeList)?
nls classBody[$t]
;

// t see the comment of classDeclaration
classBody[int t]
: LBRACE nls
(
/* Only enum can have enum constants */
{ 2 == $t }?
enumConstants (nls COMMA)? sep?
|
)
(classBodyDeclaration[$t] (sep classBodyDeclaration[$t])*? sep? RBRACE
;

enumConstants
: enumConstant (nls COMMA nls enumConstant)*
;

enumConstant
: annotationsOpt identifier arguments? anonymousInnerClassDeclaration[1]?
;

classBodyDeclaration[int t]
: (STATIC nls)? block
| memberDeclaration[$t]
;

memberDeclaration[int t]
: methodDeclaration[0, $t]
| fieldDeclaration
| modifiersOpt classDeclaration
;

/**
* t 0: *class member* all kinds of method declaration AND constructor declaration,
* 1: normal method declaration, 2: abstract method declaration
* 3: normal method declaration OR abstract method declaration
* ct 9: script, other see the comment of classDeclaration
*/
methodDeclaration[int t, int ct]

```

```

: modifiersOpt typeParameters? (returnType[$ct] nls)?
  methodName formalParameters
  (
    DEFAULT nls elementValue
  |
    (nls THROWS nls qualifiedClassNameList)?
    (nls methodBody)?
  )?
;

methodName
: identifier
| stringLiteral
;

returnType[int ct]
:
  standardType
| VOID
;

fieldDeclaration
: variableDeclaration[1]
;

variableDeclarators
: variableDeclarator (COMMA nls variableDeclarator)*
;

variableDeclarator
: variableDeclaratorId (nls ASSIGN nls variableInitializer)?
;

variableDeclaratorId
: identifier
;

variableInitializer
: enhancedStatementExpression
;

variableInitializers
: variableInitializer (nls COMMA nls variableInitializer)* nls COMMA?
;

emptyDims
: (annotationsOpt LBRACK RBRACK)+
;

```



```
emptyDimsOpt
  : emptyDims?
  ;
```

```
standardType
options { baseContext = type; }
  : annotationsOpt
  (
    primitiveType
  |
    standardClassOrInterfaceType
  )
  emptyDimsOpt
  ;
```

```
type
  : annotationsOpt
  (
    (
      primitiveType
    |
      // !!! Error Alternative !!!
      VOID
    )
  |
    generalClassOrInterfaceType
  )
  emptyDimsOpt
  ;
```

```
classOrInterfaceType
  : ( qualifiedClassName
  | qualifiedStandardClassName
  ) typeArguments?
  ;
```

```
generalClassOrInterfaceType
options { baseContext = classOrInterfaceType; }
  : qualifiedClassName typeArguments?
  ;
```

```
standardClassOrInterfaceType
options { baseContext = classOrInterfaceType; }
  : qualifiedStandardClassName typeArguments?
  ;
```

```
primitiveType
```

```

: BuiltInPrimitiveType
;

typeArguments
: LT nls typeArgument (COMMA nls typeArgument)* nls GT
;

typeArgument
: type
| annotationsOpt QUESTION ((EXTENDS | SUPER) nls type)?
;

annotatedQualifiedClassName
: annotationsOpt qualifiedClassName
;

qualifiedClassNameList
: annotatedQualifiedClassName (COMMA nls annotatedQualifiedClassName)*
;

formalParameters
: LPAREN formalParameterList? rparen
;

formalParameterList
: (formalParameter | thisFormalParameter) (COMMA nls formalParameter)*
;

thisFormalParameter
: type THIS
;

formalParameter
: variableModifiersOpt type? ELLIPSIS? variableDeclaratorId (nls ASSIGN nls expression)?
;

methodBody
: block
;

qualifiedName
: qualifiedNameElement (DOT qualifiedNameElement)*
;

/**
 * Java doesn't have the keywords 'as', 'in', 'def', 'trait' so we make some allowances
 * for them in package names for better integration with existing Java packages
 */

```

qualifiedNameElement

```
: identifier
| DEF
| IN
| AS
| TRAIT
;
```

qualifiedNameElements

```
: (qualifiedNameElement DOT)*
;
```

qualifiedClassName

```
: qualifiedNameElements identifier
;
```

qualifiedStandardClassName

```
: qualifiedNameElements className (DOT className)*
;
```

literal

```
: IntegerLiteral           #integerLiteralAlt
| FloatingPointLiteral     #floatingPointLiteralAlt
| stringLiteral            #stringLiteralAlt
| BooleanLiteral           #booleanLiteralAlt
| NullLiteral              #nullLiteralAlt
;
```

// GSTRING

gstring

```
: GStringBegin gstringValue (GStringPart gstringValue)* GStringEnd
;
```

gstringValue

```
: gstringPath
| closure
;
```

gstringPath

```
: identifier GStringPathPart*
;
```

// LAMBDA EXPRESSION

lambdaExpression

```
options { baseContext = standardLambdaExpression; }
```

```
: lambdaParameters nls ARROW nls lambdaBody
```

```

;

// JAVA STANDARD LAMBDA EXPRESSION
standardLambdaExpression
: standardLambdaParameters nls ARROW nls lambdaBody
;

lambdaParameters
options { baseContext = standardLambdaParameters; }
: formalParameters

// { a -> a * 2 } can be parsed as a lambda expression in a block, but we expect a closure.
// So it is better to put parameters in the parentheses and the following single parameter without parentheses is
limited
// | variableDeclaratorId
;

standardLambdaParameters
: formalParameters
| variableDeclaratorId
;

lambdaBody
: block
| statementExpression
;

// CLOSURE
closure
: LBRACE (nls (formalParameterList nls)? ARROW)? sep? blockStatementsOpt RBRACE
;

// GROOVY-8991: Difference in behaviour with closure and lambda
closureOrLambdaExpression
: closure
| lambdaExpression
;

blockStatementsOpt
: blockStatements?
;

blockStatements
: blockStatement (sep blockStatement)* sep?
;

// ANNOTATIONS

```

```

annotationsOpt
  : (annotation (nls annotation)* nls)?
  ;

annotation
  : AT annotationName (nls LPAREN elementValues? rparen)?
  ;

elementValues
  : elementValuePairs
  | elementValue
  ;

annotationName : qualifiedClassName ;

elementValuePairs
  : elementValuePair (COMMA elementValuePair)*
  ;

elementValuePair
  : elementValuePairName nls ASSIGN nls elementValue
  ;

elementValuePairName
  : identifier
  | keywords
  ;

// TODO verify the potential performance issue because rule expression contains sub-rule
// assignments(https://github.com/antlr/grammars-v4/issues/215)
elementValue
  : elementValueArrayInitializer
  | annotation
  | expression
  ;

elementValueArrayInitializer
  : LBRACK (elementValue (COMMA elementValue)* COMMA?)? RBRACK
  ;

// STATEMENTS / BLOCKS

block
  : LBRACE sep? blockStatementsOpt RBRACE
  ;

blockStatement
  : localVariableDeclaration

```

```

| statement
;

localVariableDeclaration
: { !SemanticPredicates.isInvalidLocalVariableDeclaration(_input) }?
  variableDeclaration[0]
;

/**
 * t 0: local variable declaration; 1: field declaration
 */
variableDeclaration[int t]
: modifiers nls
  ( type? variableDeclarators
  | typeNamePairs nls ASSIGN nls variableInitializer
  )
|
  type variableDeclarators
;

typeNamePairs
: LPAREN typeNamePair (COMMA typeNamePair)* rparen
;

typeNamePair
: type? variableDeclaratorId
;

variableNames
: LPAREN variableDeclaratorId (COMMA variableDeclaratorId)+ rparen
;

conditionalStatement
: ifElseStatement
| switchStatement
;

ifElseStatement
: IF expressionInPar nls tb=statement ((nls | sep) ELSE nls fb=statement)?
;

switchStatement
: SWITCH expressionInPar nls LBRACE nls (switchBlockStatementGroup+ nls)? RBRACE
;

loopStatement
: FOR LPAREN forControl rparen nls statement #forStmtAlt
| WHILE expressionInPar nls statement #whileStmtAlt

```

```

| DO nls statement nls WHILE expressionInPar                                #doWhileStmtAlt
;

continueStatement
: CONTINUE
  identifier?
;

breakStatement
: BREAK
  identifier?
;

tryCatchStatement
: TRY resources? nls block
  (nls catchClause)*
  (nls finallyBlock)?
;

assertStatement
: ASSERT ce=expression (nls (COLON | COMMA) nls me=expression)?
;

statement
: block                                                                    #blockStmtAlt
| conditionalStatement                                                    #conditionalStmtAlt
| loopStatement                                                            #loopStmtAlt
| tryCatchStatement                                                        #tryCatchStmtAlt
| SYNCHRONIZED expressionInPar nls block                                  #synchronizedStmtAlt
| RETURN expression?                                                       #returnStmtAlt
| THROW expression                                                         #throwStmtAlt
| breakStatement                                                            #breakStmtAlt
| continueStatement                                                        #continueStmtAlt
| identifier COLON nls statement                                           #labeledStmtAlt
| assertStatement                                                            #assertStmtAlt
| localVariableDeclaration                                                  #localVariableDeclarationStmtAlt
| statementExpression                                                       #expressionStmtAlt
| SEMI                                                                      #emptyStmtAlt
;

catchClause
: CATCH LPAREN variableModifiersOpt catchType? identifier rparen nls block
;

catchType
: qualifiedClassName (BITOR qualifiedClassName)*
;

```

finallyBlock

: FINALLY nls block  
;

resources

: LPAREN nls resourceList sep? rparen  
;

resourceList

: resource (sep resource)\*  
;

resource

: localVariableDeclaration  
| expression  
;

/\*\* Matches cases then statements, both of which are mandatory.

\* To handle empty cases at the end, we add switchLabel\* to statement.

\*/

switchBlockStatementGroup

: switchLabel (nls switchLabel)\* nls blockStatements  
;

switchLabel

: CASE expression COLON  
| DEFAULT COLON  
;

forControl

: enhancedForControl  
| classicalForControl  
;

enhancedForControl

: variableModifiersOpt type? variableDeclaratorId (COLON | IN) expression  
;

classicalForControl

: forInit? SEMI expression? SEMI forUpdate?  
;

forInit

: localVariableDeclaration  
| expressionList[false]  
;



```

forUpdate
  : expressionList[false]
  ;

// EXPRESSIONS

castParExpression
  : LPAREN type rparen
  ;

parExpression
  : expressionInPar
  ;

expressionInPar
  : LPAREN enhancedStatementExpression rparen
  ;

expressionList[boolean canSpread]
  : expressionListElement[$canSpread] (COMMA expressionListElement[$canSpread])*
  ;

expressionListElement[boolean canSpread]
  : MUL? expression
  ;

enhancedStatementExpression
  : statementExpression
  | standardLambdaExpression
  ;

statementExpression
  : commandExpression          #commandExprAlt
  ;

postfixExpression
  : pathExpression op=(INC | DEC)?
  ;

expression
  // must come before postfixExpression to resolve the ambiguities between casting and call on parentheses
  // expression, e.g. (int)(1 / 2)
  : castParExpression castOperandExpression          #castExprAlt

  // qualified names, array expressions, method invocation, post inc/dec
  | postfixExpression          #postfixExprAlt

```

```

// ~(BNOT)!:(LNOT) (level 1)
| (BITNOT | NOT) nls expression                                #unaryNotExprAlt

// math power operator (**) (level 2)
| left=expression op=POWER nls right=expression              #powerExprAlt

// ++(prefix)--(prefix)/(unary)/(unary) (level 3)
| op=(INC | DEC | ADD | SUB) expression                       #unaryAddExprAlt

// multiplication/division/modulo (level 4)
| left=expression nls op=(MUL | DIV | MOD) nls right=expression #multiplicativeExprAlt

// binary addition/subtraction (level 5)
| left=expression op=(ADD | SUB) nls right=expression        #additiveExprAlt

// bit shift expressions (level 6)
| left=expression nls
  (
    ( dlOp=LT LT
      | tgOp=GT GT GT
      | dgOp=GT GT
    )
    | rangeOp=( RANGE_INCLUSIVE
               | RANGE_EXCLUSIVE
    )
  ) nls
right=expression                                             #shiftExprAlt

// boolean relational expressions (level 7)
| left=expression nls op=(AS | INSTANCEOF | NOT_INSTANCEOF) nls type #relationalExprAlt
| left=expression nls op=(LE | GE | GT | LT | IN | NOT_IN) nls right=expression #relationalExprAlt

// equality/inequality (==/!=) (level 8)
| left=expression nls
  op=( IDENTICAL
      | NOT_IDENTICAL
      | EQUAL
      | NOTEQUAL
      | SPACESHIP
  ) nls
right=expression                                             #equalityExprAlt

// regex find and match (=~ and ==~) (level 8.5)
// jez: moved =~ closer to precedence of == etc, as...
// 'if (foo =~ "a.c")' is very close in intent to 'if (foo == "abc")'
| left=expression nls op=(REGEX_FIND | REGEX_MATCH) nls right=expression #regexExprAlt

// bitwise or non-short-circuiting and (&) (level 9)
| left=expression nls op=BITAND nls right=expression         #andExprAlt

```

```

// exclusive or (^) (level 10)
| left=expression nls op=XOR nls right=expression                                #exclusiveOrExprAlt

// bitwise or non-short-circuiting or (|) (level 11)
| left=expression nls op=BITOR nls right=expression                            #inclusiveOrExprAlt

// logical and (&&) (level 12)
| left=expression nls op=AND nls right=expression                              #logicalAndExprAlt

// logical or (||) (level 13)
| left=expression nls op=OR nls right=expression                              #logicalOrExprAlt

// conditional test (level 14)
| <assoc=right> con=expression nls
  ( QUESTION nls tb=expression nls COLON nls
    | ELVIS nls
    )
  fb=expression                                                                #conditionalExprAlt

// assignment expression (level 15)
// "(a) = [1]" is a special case of multipleAssignmentExprAlt, it will be handle by assignmentExprAlt
| <assoc=right> left=variableNames nls op=ASSIGN nls right=statementExpression
#multipleAssignmentExprAlt
| <assoc=right> left=expression nls
  op=( ASSIGN
    | ADD_ASSIGN
    | SUB_ASSIGN
    | MUL_ASSIGN
    | DIV_ASSIGN
    | AND_ASSIGN
    | OR_ASSIGN
    | XOR_ASSIGN
    | RSHIFT_ASSIGN
    | URSHIFT_ASSIGN
    | LSHIFT_ASSIGN
    | MOD_ASSIGN
    | POWER_ASSIGN
    | ELVIS_ASSIGN
    ) nls
  enhancedStatementExpression                                                #assignmentExprAlt
;

castOperandExpression
options { baseContext = expression; }
: castParExpression castOperandExpression                                    #castExprAlt

| postfixExpression                                                            #postfixExprAlt

```

```

// ~(BNOT)!/(LNOT)
| (BITNOT | NOT) nls castOperandExpression                                #unaryNotExprAlt

// ++(prefix)/--(prefix)/(unary)/(unary)
| op=(INC | DEC | ADD | SUB) castOperandExpression                        #unaryAddExprAlt
;

commandExpression
: expression
(
  { !SemanticPredicates.isFollowingArgumentsOrClosure($expression.ctx) }?
  argumentList
|
  /* if pathExpression is a method call, no need to have any more arguments */
)

  commandArgument*
;

commandArgument
: commandPrimary
  // what follows is either a normal argument, parens,
  // an appended block, an index operation, or nothing
  // parens (a b already processed):
  //   a b c() d e -> a(b).c().d(e)
  //   a b c()() d e -> a(b).c().call().d(e)
  // index (a b already processed):
  //   a b c[x] d e -> a(b).c[x].d(e)
  //   a b c[x][y] d e -> a(b).c[x][y].d(e)
  // block (a b already processed):
  //   a b c {x} d e -> a(b).c({x}).d(e)
  //
  // parens/block completes method call
  // index makes method call to property get with index
  //
  ( pathElement+
  | argumentList
  )?
;

/**
* A "path expression" is a name or other primary, possibly qualified by various
* forms of dot, and/or followed by various kinds of brackets.
* It can be used for value or assigned to, or else further qualified, indexed, or called.
* It is called a "path" because it looks like a linear path through a data structure.
* Examples: x.y, x?.y, x*.y, x.@y; x[], x[y], x[y,z]; x(), x(y), x(y,z); x{s}; a.b[n].c(x).d{s}
* (Compare to a C lvalue, or LeftHandSide in the JLS section 15.26.)

```

```

* General expressions are built up from path expressions, using operators like '+' and '='.
*
* t 0: primary, 1: namePart, 2: arguments, 3: closureOrLambdaExpression, 4: indexPropertyArgs, 5:
namedPropertyArgs,
* 6: non-static inner class creator
*/

```

```

pathExpression returns [int t]

```

```

: (
  primary
  |
  // if 'static' followed by DOT, we can treat them as identifiers, e.g. static.unused = { -> }
  { _input.LT(2).getType() == DOT }?
  STATIC
) (pathElement { $t = $pathElement.t; })*
;

```

```

pathElement returns [int t]

```

```

: nls
(
  DOT nls NEW creator[1]
  { $t = 6; }
  |
  // AT: foo.@bar selects the field (or attribute), not property
  (
    ( DOT // The all-powerful dot.
    | SPREAD_DOT // Spread operator: x*.y === x?.collect{it.y}
    | SAFE_DOT // Optional-null operator: x?.y === (x==null)?null:x.y
    | SAFE_CHAIN_DOT // Optional-null chain operator: x??.y.z === x?.y?.z
    ) nls (AT | nonWildcardTypeArguments)?
  |
  METHOD_POINTER nls // Method pointer operator: foo.&y == foo.metaClass.getMethodPointer(foo,
"y")
  |
  METHOD_REFERENCE nls // Method reference: System.out::println
  )
  namePart
  { $t = 1; }

  // Can always append a block, as foo{bar}
  | closureOrLambdaExpression
  { $t = 3; }
  )

  | arguments
  { $t = 2; }

  // Element selection is always an option, too.
  // In Groovy, the stuff between brackets is a general argument list,

```

```

// since the bracket operator is transformed into a method call.
| indexPropertyArgs
  { $t = 4; }

| namedPropertyArgs
  { $t = 5; }
;

/**
 * This is the grammar for what can follow a dot: x.a, x.@a, x.&a, x.'a', etc.
 */
namePart
:
  ( identifier

  // foo.'bar' is in all ways same as foo.bar, except that bar can have an arbitrary spelling
  | stringLiteral

  | dynamicMemberName

  /* just a PROPOSAL, which has not been implemented yet!
  // PROPOSAL, DECIDE: Is this inline form of the 'with' statement useful?
  // Definition: a.{foo} === {with(a) {foo}}
  // May cover some path expression use-cases previously handled by dynamic scoping (closure delegates).
  | block
  */

  // let's allow common keywords as property names
  | keywords
  )
;

/**
 * If a dot is followed by a parenthesized or quoted expression, the member is computed dynamically,
 * and the member selection is done only at runtime. This forces a statically unchecked member access.
 */
dynamicMemberName
: parExpression
| gstring
;

/** An expression may be followed by [...].
 * Unlike Java, these brackets may contain a general argument list,
 * which is passed to the array element operator, which can make of it what it wants.
 * The brackets may also be empty, as in T[]. This is how Groovy names array types.
 */
indexPropertyArgs
: QUESTION? LBRACK expressionList[true]? RBRACK

```

```

;

namedPropertyArgs
: QUESTION? LBRACK (namedPropertyArgList | COLON) RBRACK
;

primary
:
  // Append `typeArguments?` to `identifier` to support constructor reference with generics, e.g.
  HashMap<String, Integer>::new
  // Though this is not a graceful solution, it is much faster than replacing `builtInType` with `type`
  identifier typeArguments?                                #identifierPrmrAlt
| literal                                                  #literalPrmrAlt
| gstring                                                  #gstringPrmrAlt
| NEW nls creator[0]                                       #newPrmrAlt
| THIS                                                    #thisPrmrAlt
| SUPER                                                  #superPrmrAlt
| parExpression                                           #parenPrmrAlt
| closureOrLambdaExpression                             #closureOrLambdaExpressionPrmrAlt
| list                                                    #listPrmrAlt
| map                                                     #mapPrmrAlt
| builtInType                                            #builtInTypePrmrAlt
;

namedPropertyArgPrimary
options { baseContext = primary; }
: identifier                                              #identifierPrmrAlt
| literal                                                  #literalPrmrAlt
| gstring                                                  #gstringPrmrAlt
| parExpression                                           #parenPrmrAlt
;

namedArgPrimary
options { baseContext = primary; }
: identifier                                              #identifierPrmrAlt
| literal                                                  #literalPrmrAlt
| gstring                                                  #gstringPrmrAlt
;

commandPrimary
options { baseContext = primary; }
: identifier                                              #identifierPrmrAlt
| literal                                                  #literalPrmrAlt
| gstring                                                  #gstringPrmrAlt
;

list
: LBRACK expressionList[true]? COMMA? RBRACK

```

```

;

map
: LBRACK
  ( mapEntryList COMMA?
    | COLON
  )
  RBRACK
;

mapEntryList
: mapEntry (COMMA mapEntry)*
;

namedPropertyArgList
options { baseContext = mapEntryList; }
: namedPropertyArg (COMMA namedPropertyArg)*
;

mapEntry
: mapEntryLabel COLON nls expression
| MUL COLON nls expression
;

namedPropertyArg
options { baseContext = mapEntry; }
: namedPropertyArgLabel COLON nls expression
| MUL COLON nls expression
;

namedArg
options { baseContext = mapEntry; }
: namedArgLabel COLON nls expression
| MUL COLON nls expression
;

mapEntryLabel
: keywords
| primary
;

namedPropertyArgLabel
options { baseContext = mapEntryLabel; }
: keywords
| namedPropertyArgPrimary
;

namedArgLabel

```



```

options { baseContext = mapEntryLabel; }
  : keywords
  | namedArgPrimary
  ;

/**
 * t 0: general creation; 1: non-static inner class creation
 */
creator[int t]
  : createdName
    ( nls arguments anonymousInnerClassDeclaration[0]?
    | dim+ (nls arrayInitializer)?
    )
  ;

dim
  : annotationsOpt LBRACK expression? RBRACK
  ;

arrayInitializer
  : LBRACE nls (variableInitializers nls)? RBRACE
  ;

/**
 * t 0: anonymous inner class; 1: anonymous enum
 */
anonymousInnerClassDeclaration[int t]
  : classBody[0]
  ;

createdName
  : annotationsOpt
    ( primitiveType
    | qualifiedClassName typeArgumentsOrDiamond?
    )
  ;

nonWildcardTypeArguments
  : LT nls typeList nls GT
  ;

typeArgumentsOrDiamond
  : LT GT
  | typeArguments
  ;

arguments
  : LPAREN enhancedArgumentListInPar? COMMA? rparen

```

```

;

argumentList
options { baseContext = enhancedArgumentListInPar; }
: firstArgumentListElement
  ( COMMA nls
    argumentListElement
  )*
;

enhancedArgumentList
options { baseContext = enhancedArgumentListInPar; }
: firstEnhancedArgumentListElement
  ( COMMA nls
    enhancedArgumentListElement
  )*
;

enhancedArgumentListInPar
: enhancedArgumentListElement
  ( COMMA nls
    enhancedArgumentListElement
  )*
;

firstArgumentListElement
options { baseContext = enhancedArgumentListElement; }
: expressionListElement[true]
| namedArg
;

argumentListElement
options { baseContext = enhancedArgumentListElement; }
: expressionListElement[true]
| namedPropertyArg
;

firstEnhancedArgumentListElement
options { baseContext = enhancedArgumentListElement; }
: expressionListElement[true]
| standardLambdaExpression
| namedArg
;

enhancedArgumentListElement
: expressionListElement[true]
| standardLambdaExpression
| namedPropertyArg

```

```
;

stringLiteral
: StringLiteral
;

className
: CapitalizedIdentifier
;

identifier
: Identifier
| CapitalizedIdentifier
| VAR
| IN
// | DEF
| TRAIT
| AS
;

builtInType
: BuiltInPrimitiveType
| VOID
;

keywords
: ABSTRACT
| AS
| ASSERT
| BREAK
| CASE
| CATCH
| CLASS
| CONST
| CONTINUE
| DEF
| DEFAULT
| DO
| ELSE
| ENUM
| EXTENDS
| FINAL
| FINALLY
| FOR
| GOTO
| IF
| IMPLEMENTS
| IMPORT
```

| IN  
| INSTANCEOF  
| INTERFACE  
| NATIVE  
| NEW  
| PACKAGE  
| RETURN  
| STATIC  
| STRICTFP  
| SUPER  
| SWITCH  
| SYNCHRONIZED  
| THIS  
| THROW  
| THROWS  
| TRANSIENT  
| TRAIT  
| THREADSAFE  
| TRY  
| VAR  
| VOLATILE  
| WHILE  
  
| NullLiteral  
| BooleanLiteral  
  
| BuiltInPrimitiveType  
| VOID  
  
| PUBLIC  
| PROTECTED  
| PRIVATE  
;

rparen  
: RPAREN  
;

nls  
: NL\*  
;

sep : (NL | SEMI)+  
;

Found in path(s):

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/GroovyParser.g4

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```
/*
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 * under the License.
 */
```

Found in path(s):

```
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/apache/groovy/metaclass/MetaClass.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Tuple1.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/ModifierNode.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/reflection/ReflectionCache.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/ProcessGroovyMethods.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/dgmimpl/arrays/BooleanArrayGetAtMetaMethod.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/Trait.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/classgen/ClassGenerator.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/expr/MapEntryExpression.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/tools/javac/MemJavaFileObject.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/ReverseListIterator.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/transform/ThreadInterruptibleASTTransformation.groovy
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/IndentPrinter.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/callsite/PojoMetaMethodSite.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
```

jar/org/codehaus/groovy/control/io/ReaderSource.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/io/GroovyPrintStream.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/MetaMethod.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/treewalker/PreOrderTraversal.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/parser/antlr4/Antlr4ParserPlugin.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/util/ReferenceType.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/vmplugin/v7/IndyGuardsFiltersAndSignatures.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/java/Java2GroovyMain.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/IntRange.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/callsite/BooleanReturningMethodInvoker.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/decompiled/TypeSignatureParser.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/control/io/NullWriter.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/stc/ThirdParam.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/AnnotationVisitor.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/reflection/stdclasses/LongCachedClass.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/GroovyResourceLoader.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/tools/FileSystemCompiler.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/transform/stc/TraitTypeCheckingExtension.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/callsite/PlainObjectMetaMethodSite.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/stc/MapEntryOrKeyValue.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/asm/InvocationWriter.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/control/messages/Message.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/tools/ClassNodeUtils.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/util/FastArray.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/MutableMetaClass.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/expr/BinaryExpression.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/tools/GroovyStarter.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-

jar/org/codehaus/groovy/runtime/metaclass/ReflectionMetaMethod.java  
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jar/org/codehaus/groovy/ast/MethodCallTransformation.java  
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jar/org/apache/groovy/parser/antlr4/util/PositionConfigureUtils.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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jar/org/codehaus/groovy/transform/ToStringASTTransformation.java  
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jar/org/codehaus/groovy/transform/sc/transformers/CastExpressionOptimizer.java  
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jar/org/codehaus/groovy/classgen/ExtendedVerifier.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/groovy/transform/ImmutableOptions.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/util/IntArrayIterable.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/Immutable.groovy  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/control/HasCleanup.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/control/customizers/ImportCustomizer.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/apache/groovy/antlr/LexerFrame.java  
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jar/org/codehaus/groovy/runtime/memoize/NullProtectionStorage.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/control/InstanceOfVerifier.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/reflection/android/AndroidSupport.java  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/tools/javac/JavaCompilerFactory.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/ast/expr/MethodCall.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/groovy/lang/groovydoc/GroovydocHolder.java

- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/Internal.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/ParameterArray.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/parser/antlr4/AstBuilder.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/typehandling/BigDecimalMath.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/memoize/MemoizeCache.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/parser/antlr4/util/StringUtils.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/reflection/stdclasses/CharacterCachedClass.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/m12n/StandardPropertiesModuleFactory.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/BenchmarkInterceptor.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Tuple3.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/GrabResolver.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/InheritConstructors.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/vmplugin/v5/JUnit4Utils.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/expr/LambdaExpression.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/logging/Slf4j.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/TypeChecked.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/time/TimeDuration.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/ui/GroovyMain.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/Parameter.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/stmt/AssertStatement.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/reflection/stdclasses/ByteCachedClass.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/transform/stc/AbstractTypeCheckingExtension.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/expr/CastExpression.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/MissingClassException.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/expr/UnaryMinusExpression.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/time/BaseDuration.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/tools/javac/RawJavaFileObject.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/callsite/ConstructorMetaClassSite.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/lang/annotation/Incubating.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-



jar/org/codehaus/groovy/ast/expr/UnaryPlusExpression.java  
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/metaclass/MixinInstanceMetaMethod.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/ProxyGenerator.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/InnerClassVisitorHelper.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/AbstractComparator.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/syntax/SyntaxException.java
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/CharsetToolkit.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/TupleConstructor.java
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/ast/tools/ImmutablePropertyUtils.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/util/ReleaseInfo.java
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/ObjectGraphBuilder.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/beans/Vetoable.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/control/customizers/builder/SourceAwareCustomizerFactory.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/options/ImmutablePropertyHandler.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/HandleMetaClass.java
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/PropertyNode.java
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/ast/stmt/ReturnStatement.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/classgen/asm/BytecodeVariable.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/ProxyMetaClass.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/util/LazyReference.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/MapEntry.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/util/ListHashMap.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Reference.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/Canonical.groovy  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/transform/ErrorCollecting.java  
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jar/org/codehaus/groovy/runtime/ReflectionMethodInvoker.java  
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/callsite/PojoMetaClassGetPropertySite.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/vmplugin/v8/CacheableCallSite.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/EncodingGroovyMethods.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/transform/AbstractASTTransformUtil.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/asm/BytecodeHelper.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/SourceInfo.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/util/ReferenceBundle.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/ASTRuntimeException.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/control/ProcessingUnit.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/internal/util/ReevaluatingReference.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/powerassert/PowerAssertionError.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/FileTreeBuilder.groovy
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/dgmimpl/arrays/LongArrayPutAtMetaMethod.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Tuple7.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/stc/PickAnyArgumentHint.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/builder/Builder.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/stmt/SynchronizedStatement.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/control/ConfigurationException.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/AsmClassGenerator.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/memoize/EvictableCache.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/AbstractFactory.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/syntax/RuntimeParserException.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/transform/FieldASTTransformation.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/stc/PickFirstResolver.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/syntax/Types.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/EnumCompletionVisitor.java
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jar/groovy/lang/GeneratedGroovyProxy.java  
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jar/org/codehaus/groovy/ast/expr/NamedArgumentListExpression.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/GroovySystem.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Tuple6.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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 jar/org/codehaus/groovy/reflection/GeneratedMetaMethod.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/stc/FromString.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/util/CharArrayIterator.java  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/MethodKey.java  
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/control/io/InputStreamReaderSource.java



- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/control/io/StringReaderSource.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/util/URLStreams.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/CompilationUnitAware.java
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/metaclass/Realm.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/transform/trait/SuperCallTraitTransformer.java
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Tuple.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/transform/sc/transformers/ConstructorCallTransformer.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/typehandling/NumberMathModificationInfo.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/metaclass/ConcurrentReaderHashMap.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/vmplugin/v9/ClassFinder.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/groovydoc/Groovydoc.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/NodePrinter.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/MetaObjectProtocol.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/AntlrASTProcessSnippets.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/PackageScopeTarget.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/control/messages/SimpleMessage.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/ReturnAdder.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/callsite/GroovySunClassLoader.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/reflection/stdclasses/IntegerCachedClass.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/callsite/BooleanClosureWrapper.java

- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/expr/ClosureListExpression.java
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/tools/javac/JavaStubGenerator.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/dgmimpl/arrays/ObjectArrayPutAtMetaMethod.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/asm/BinaryFloatExpressionHelper.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/treewalker/NodeAsHTMLPrinter.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/parser/antlr4/GroovySyntaxError.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/util/SingleKeyHashMap.java

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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/metaclass/TemporaryMethodKey.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Lazy.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/callsite/PojoMetaClassSite.java
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/expr/ConstantExpression.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/util/ObjectHolder.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/DummyClassGenerator.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/control/XStreamUtils.java
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/AntlrASTProcessor.java
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/callsite/MetaClassSite.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/syntax/TokenMismatchException.java
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/treewalker/SourceCodeTraversal.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/reflection/stdclasses/ShortCachedClass.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/DelegatesTo.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/typehandling/IntegerMath.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/GroovySourceAST.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/asm/BinaryExpressionMultiTypeDispatcher.java

- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/stc/ClosureSignatureHint.java
- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/tools/PropertyNodeUtils.java
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/tools/DgmConverter.java
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/MetaClassHelper.java
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- \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/plugin/DefaultRunners.java
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 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/util/DoubleArrayIterator.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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 jar/org/codehaus/groovy/antlr/LexerFrame.java  
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 jar/org/apache/groovy/parser/antlr4/internal/atnmanager/ParserAtnManager.java  
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 jar/org/codehaus/groovy/transform/ASTTransformationCollectorCodeVisitor.java  
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 jar/org/codehaus/groovy/transform/stc/StaticTypeCheckingVisitor.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/util/SystemUtil.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/DelegatingMetaClass.java  
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 jar/groovy/lang/PropertyAccessInterceptor.java  
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 jar/org/codehaus/groovy/ast/stmt/ForStatement.java  
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 jar/org/codehaus/groovy/ast/expr/VariableExpression.java  
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 jar/org/codehaus/groovy/ast/expr/SpreadMapExpression.java  
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 jar/org/codehaus/groovy/runtime/metaclass/ThreadManagedMetaBeanProperty.java  
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 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/GroovyInterceptable.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/tools/shell/IO.java  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/NumberAwareComparator.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/transform/tailrec/InWhileLoopWrapper.groovy  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Mixin.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Script.java  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/InterfaceHelperClassNode.java  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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jar/org/codehaus/groovy/antlr/treewalker/VisitorAdapter.java  
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jar/org/codehaus/groovy/antlr/GroovySourceToken.java  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/classgen/asm/indy/sc/IndyStaticTypesMultiTypeDispatcher.java  
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jar/org/codehaus/groovy/reflection/GroovyClassValuePreJava7.java  
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jar/groovy/transform/stc/ClosureSignatureConflictResolver.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/tools/StringHelper.java

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```
/** Java 1.5 Recognizer
 *
 * Run 'java Main [-showtree] directory-full-of-java-files'
 *
 * [The -showtree option pops up a Swing frame that shows
 * the AST constructed from the parser.]
 *
 * Run 'java Main <directory full of java files>'
 *
 * Contributing authors:
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 *   Steve Messick  messick@redhills.com
 *   John Pybus     john@pybus.org
 *
 * Version 1.00 December 9, 1997 -- initial release
 * Version 1.01 December 10, 1997
 * fixed bug in octal def (0..7 not 0..8)
 * Version 1.10 August 1998 (parrt)
 * added tree construction
 * fixed definition of WS,comments for mac,pc,unix newlines
 * added unary plus
 * Version 1.11 (Nov 20, 1998)
 * Added "shutup" option to turn off last ambig warning.
 * Fixed inner class def to allow named class defs as statements
 * synchronized requires compound not simple statement
 * add [] after builtInType DOT class in primaryExpression
 * "const" is reserved but not valid..removed from modifiers
 * Version 1.12 (Feb 2, 1999)
 * Changed LITERAL_XXX to xxx in tree grammar.
 * Updated java.g to use tokens {...} now for 2.6.0 (new feature).
 *
 * Version 1.13 (Apr 23, 1999)
 * Didn't have (stat)? for else clause in tree parser.
 * Didn't gen ASTs for interface extends. Updated tree parser too.
 * Updated to 2.6.0.
 * Version 1.14 (Jun 20, 1999)
 * Allowed final/abstract on local classes.
 * Removed local interfaces from methods
 * Put instanceof precedence where it belongs...in relationalExpr
```

- \* It also had expr not type as arg; fixed it.
- \* Missing ! on SEMI in classBlock
- \* fixed: (expr) + "string" was parsed incorrectly (+ as unary plus).
- \* fixed: didn't like Object[].class in parser or tree parser
- \* Version 1.15 (Jun 26, 1999)
- \* Screwed up rule with instanceof in it. :( Fixed.
- \* Tree parser didn't like (expr).something; fixed.
- \* Allowed multiple inheritance in tree grammar. oops.
- \* Version 1.16 (August 22, 1999)
- \* Extending an interface built a wacky tree: had extra EXTENDS.
- \* Tree grammar didn't allow multiple superinterfaces.
- \* Tree grammar didn't allow empty var initializer: { }
- \* Version 1.17 (October 12, 1999)
- \* ESC lexer rule allowed 399 max not 377 max.
- \* java.tree.g didn't handle the expression of synchronized statements.
- \* Version 1.18 (August 12, 2001)
- \* Terence updated to Java 2 Version 1.3 by observing/combining work of Allan Jacobs and Steve Messick. Handles 1.3 src. Summary:
  - \* o primary didn't include boolean.class kind of thing
  - \* o constructor calls parsed explicitly now:
    - \* see explicitConstructorInvocation
  - \* o add strictfp modifier
    - \* o missing objBlock after new expression in tree grammar
    - \* o merged local class definition alternatives, moved after declaration
    - \* o fixed problem with ClassName.super.field
      - \* o reordered some alternatives to make things more efficient
    - \* o long and double constants were not differentiated from int/float
    - \* o whitespace rule was inefficient: matched only one char
    - \* o add an examples directory with some nasty 1.3 cases
    - \* o made Main.java use buffered IO and a Reader for Unicode support
    - \* o supports UNICODE?
      - \* Using Unicode charVocabulay makes code file big, but only in the bitsets at the end. I need to make ANTLR generate unicode bitsets more efficiently.
- \* Version 1.19 (April 25, 2002)
- \* Terence added in nice fixes by John Pybus concerning floating constants and problems with super() calls. John did a nice reorg of the primary/postfix expression stuff to read better and makes f.g.super() parse properly (it was METHOD\_CALL not a SUPER\_CTOR\_CALL). Also:
  - \*
    - \* o "finally" clause was a root...made it a child of "try"
    - \* o Added stuff for asserts too for Java 1.4, but \*commented out\* as it is not backward compatible.
- \* Version 1.20 (October 27, 2002)

- \*
  - \* Terence ended up reorging John Pybus' stuff to
  - \* remove some nondeterminisms and some syntactic predicates.
  - \* Note that the grammar is stricter now; e.g., this(...) must
  - \* be the first statement.
- \*
  - \* Ternary ?: operator wasn't working as array name:
  - \* (isBig ? bigDigits : digits)[i];
- \*
  - \* Checked parser/tree parser on source for
  - \* Resin-2.0.5, jive-2.1.1, jdk 1.3.1, Lucene, antlr 2.7.2a4,
  - \* and the 110k-line jGuru server source.
- \*
  - \* Version 1.21 (October 17, 2003)
  - \* Fixed lots of problems including:
    - \* Ray Waldin: add typeDefinition to interfaceBlock in java.tree.g
    - \* He found a problem/fix with floating point that start with 0
    - \* Ray also fixed problem that (int.class) was not recognized.
    - \* Thorsten van Ellen noticed that \n are allowed incorrectly in strings.
    - \* TJP fixed CHAR\_LITERAL analogously.
- \*
  - \* Version 1.21.2 (March, 2003)
  - \* Changes by Matt Quail to support generics (as per JDK1.5/JSR14)
  - \* Notes:
    - \* o We only allow the "extends" keyword and not the "implements"
    - \* keyword, since that's what JSR14 seems to imply.
    - \* o Thanks to Monty Zukowski for his help on the antlr-interest
    - \* mail list.
    - \* o Thanks to Alan Eliassen for testing the grammar over his
  - \* Fink source base
- \*
  - \* Version 1.22 (July, 2004)
  - \* Changes by Michael Studman to support Java 1.5 language extensions
  - \* Notes:
    - \* o Added support for annotations types
    - \* o Finished off Matt Quail's generics enhancements to support bound type arguments
    - \* o Added support for new for statement syntax
    - \* o Added support for static import syntax
    - \* o Added support for enum types
    - \* o Tested against JDK 1.5 source base and source base of jdigraph project
    - \* o Thanks to Matt Quail for doing the hard part by doing most of the generics work
- \*
  - \* Version 1.22.1 (July 28, 2004)
  - \* Bug/omission fixes for Java 1.5 language support
    - \* o Fixed tree structure bug with classOrInterface - thanks to Pieter Vangorpto for
    - \* spotting this
    - \* o Fixed bug where incorrect handling of SR and BSR tokens would cause type
    - \* parameters to be recognised as type arguments.

- \* o Enabled type parameters on constructors, annotations on enum constants
- \* and package definitions
- \* o Fixed problems when parsing if ((char.class.equals(c))) {} - solution by Matt Quail at Cenqua
- \*
- \* Version 1.22.2 (July 28, 2004)
- \* Slight refactoring of Java 1.5 language support
- \* o Refactored for/"foreach" productions so that original literal "for" literal
- \* is still used but the for sub-clauses vary by token type
- \* o Fixed bug where type parameter was not included in generic constructor's branch of AST
- \*
- \* Version 1.22.3 (August 26, 2004)
- \* Bug fixes as identified by Michael Stahl; clean up of tabs/spaces
- \* and other refactorings
- \* o Fixed typeParameters omission in identPrimary and newStatement
- \* o Replaced GT reconciliation code with simple semantic predicate
- \* o Adapted enum/assert keyword checking support from Michael Stahl's java15 grammar
- \* o Refactored typeDefinition production and field productions to reduce duplication
- \*
- \* Version 1.22.4 (October 21, 2004)
- \* Small bux fixes
- \* o Added typeArguments to explicitConstructorInvocation, e.g. new <String>MyParameterised()
- \* o Added typeArguments to postfixExpression productions for anonymous inner class super
- \* constructor invocation, e.g. new Outer().<String>super()
- \* o Fixed bug in array declarations identified by Geoff Roy
- \*
- \* Version 1.22.4.j.1
- \* Changes by Jeremy Rayner to support java2groovy tool
- \* o I have taken java.g for Java 1.5 from Michael Studman (1.22.4)
- \* and have made some changes to enable use by java2groovy tool (Jan 2007)
- \*
- \* Based on an original grammar released in the PUBLIC DOMAIN
- \*/

Found in path(s):

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/java/JavaRecognizer.java

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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/apache/groovy/util/concurrent/concurrentlinkedhashmap/Weighers.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/apache/groovy/util/concurrent/concurrentlinkedhashmap/ConcurrentLinkedHashMap.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/apache/groovy/util/concurrent/concurrentlinkedhashmap/Weigher.java  
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jar/org/apache/groovy/util/concurrent/concurrentlinkedhashmap/EvictionListener.java  
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\*/

/\*\*

\* The Groovy grammar is based on the official grammar for Java:



```

* https://github.com/antlr/grammars-v4/blob/master/java/Java.g4
*/
lexer grammar GroovyLexer;

options {
    superClass = AbstractLexer;
}

@header {
    import java.util.Deque;
    import java.util.ArrayDeque;
    import java.util.Map;
    import java.util.HashMap;
    import java.util.Set;
    import java.util.HashSet;
    import java.util.Collections;
    import java.util.Arrays;
    import java.util.stream.IntStream;
    import java.util.logging.Logger;
    import java.util.logging.Level;
    import java.util.EmptyStackException;
    import org.apache.groovy.util.Maps;
    import static org.apache.groovy.parser.antlr4.SemanticPredicates.*;
}

@members {
    private static final Logger LOGGER = Logger.getLogger(GroovyLexer.class.getName());

    private boolean errorIgnored;
    private long tokenIndex;
    private int lastTokenType;
    private int invalidDigitCount;

    /**
     * Record the index and token type of the current token while emitting tokens.
     */
    @Override
    public void emit(Token token) {
        this.tokenIndex++;

        int tokenType = token.getType();
        if (Token.DEFAULT_CHANNEL == token.getChannel()) {
            this.lastTokenType = tokenType;
        }

        if (RollBackOne == tokenType) {
            this.rollbackOneChar();
        }
    }
}

```

```

    super.emit(token);
}

private static final int[] REGEX_CHECK_ARRAY = {
    DEC,
    INC,
    THIS,
    RBRACE,
    RBRACK,
    RPAREN,
    GStringEnd,
    NullLiteral,
    StringLiteral,
    BooleanLiteral,
    IntegerLiteral,
    FloatingPointLiteral,
    Identifier, CapitalizedIdentifier
};
static {
    Arrays.sort(REGEX_CHECK_ARRAY);
}

private boolean isRegexAllowed() {
    return (Arrays.binarySearch(REGEX_CHECK_ARRAY, this.lastTokenType) < 0);
}

/**
 * just a hook, which will be overridden by GroovyLangLexer
 */
protected void rollbackOneChar() {}

private static class Paren {
    private String text;
    private int lastTokenType;
    private int line;
    private int column;

    public Paren(String text, int lastTokenType, int line, int column) {
        this.text = text;
        this.lastTokenType = lastTokenType;
        this.line = line;
        this.column = column;
    }

    public String getText() {
        return this.text;
    }
}

```

```

public int getLastTokenType() {
    return this.lastTokenType;
}

public int getLine() {
    return line;
}

public int getColumn() {
    return column;
}

@Override
public int hashCode() {
    return (int) (text.hashCode() * line + column);
}

@Override
public boolean equals(Object obj) {
    if (!(obj instanceof Paren)) {
        return false;
    }

    Paren other = (Paren) obj;

    return this.text.equals(other.text) && (this.line == other.line && this.column == other.column);
}
}

protected void enterParenCallback(String text) {}

protected void exitParenCallback(String text) {}

private final Deque<Paren> parenStack = new ArrayDeque<>(32);

private void enterParen() {
    String text = getText();
    enterParenCallback(text);

    parenStack.push(new Paren(text, this.lastTokenType, getLine(), getCharPositionInLine()));
}

private void exitParen() {
    String text = getText();
    exitParenCallback(text);

    Paren paren = parenStack.peek();
}

```

```

    if (null == paren) return;
    parenStack.pop();
}
private boolean isInsideParens() {
    Paren paren = parenStack.peek();

    // We just care about "(" and "[", inside which the new lines will be ignored.
    // Notice: the new lines between "{" and "}" can not be ignored.
    if (null == paren) {
        return false;
    }

    return ("(" .equals(paren.getText()) && TRY != paren.getLastTokenType()) // we don't treat try-paren(i.e. try
(...)) as parenthesis
        || "[" .equals(paren.getText());
}
private void ignoreTokenInsideParens() {
    if (!this.isInsideParens()) {
        return;
    }

    this.setChannel(Token.HIDDEN_CHANNEL);
}
private void ignoreMultiLineCommentConditionally() {
    if (!this.isInsideParens() && isFollowedByWhiteSpaces(_input)) {
        return;
    }

    this.setChannel(Token.HIDDEN_CHANNEL);
}

@Override
public int getSyntaxErrorSource() {
    return GroovySyntaxError.LEXER;
}

@Override
public int getErrorLine() {
    return getLine();
}

@Override
public int getErrorColumn() {
    return getCharPositionInLine() + 1;
}

@Override
public int popMode() {

```

```

try {
    return super.popMode();
} catch (EmptyStackException ignored) { // raised when parens are unmatched: too many ), ], or }
    if (LOGGER.isLoggable(Level.FINEST)) {
        LOGGER.finest(org.codehaus.groovy.runtime.DefaultGroovyMethods.asString(ignored));
    }
}

return Integer.MIN_VALUE;
}

private static boolean isJavaIdentifierStartAndNotIdentifierIgnorable(int codePoint) {
    return Character.isJavaIdentifierStart(codePoint) && !Character.isIdentifierIgnorable(codePoint);
}

private static boolean isJavaIdentifierPartAndNotIdentifierIgnorable(int codePoint) {
    return Character.isJavaIdentifierPart(codePoint) && !Character.isIdentifierIgnorable(codePoint);
}

public boolean isErrorIgnored() {
    return errorIgnored;
}

public void setErrorIgnored(boolean errorIgnored) {
    this.errorIgnored = errorIgnored;
}
}

```

### // 3.10.5 String Literals

#### StringLiteral

```

: GStringQuotationMark DqStringCharacter* GStringQuotationMark
| SqStringQuotationMark SqStringCharacter* SqStringQuotationMark
| Slash { this.isRegexAllowed() && _input.LA(1) != '*' }? SlashyStringCharacter+ Slash

| TdqStringQuotationMark TdqStringCharacter* TdqStringQuotationMark
| TsqStringQuotationMark TsqStringCharacter* TsqStringQuotationMark
| DollarSlashyGStringQuotationMarkBegin DollarSlashyStringCharacter+
DollarSlashyGStringQuotationMarkEnd
;

```

#### GStringBegin

```

: GStringQuotationMark DqStringCharacter* Dollar -> pushMode(DQ_GSTRING_MODE),
pushMode(GSTRING_TYPE_SELECTOR_MODE)
;

```

#### TdqGStringBegin

```

: TdqStringQuotationMark TdqStringCharacter* Dollar -> type(GStringBegin),
pushMode(TDQ_GSTRING_MODE), pushMode(GSTRING_TYPE_SELECTOR_MODE)

```

```

;
SlashyGStringBegin
: Slash { this.isRegexAllowed() && _input.LA(1) != '*' }? SlashyStringCharacter* Dollar {
isFollowedByJavaLetterInGString(_input) }? -> type(GStringBegin), pushMode(SLASHY_GSTRING_MODE),
pushMode(GSTRING_TYPE_SELECTOR_MODE)
;
DollarSlashyGStringBegin
: DollarSlashyGStringQuotationMarkBegin DollarSlashyStringCharacter* Dollar {
isFollowedByJavaLetterInGString(_input) }? -> type(GStringBegin),
pushMode(DOLLAR_SLASHY_GSTRING_MODE), pushMode(GSTRING_TYPE_SELECTOR_MODE)
;

mode DQ_GSTRING_MODE;
GStringEnd
: GStringQuotationMark -> popMode
;
GStringPart
: Dollar -> pushMode(GSTRING_TYPE_SELECTOR_MODE)
;
GStringCharacter
: DqStringCharacter -> more
;

mode TDQ_GSTRING_MODE;
TdqGStringEnd
: TdqStringQuotationMark -> type(GStringEnd), popMode
;
TdqGStringPart
: Dollar -> type(GStringPart), pushMode(GSTRING_TYPE_SELECTOR_MODE)
;
TdqGStringCharacter
: TdqStringCharacter -> more
;

mode SLASHY_GSTRING_MODE;
SlashyGStringEnd
: Dollar? Slash -> type(GStringEnd), popMode
;
SlashyGStringPart
: Dollar { isFollowedByJavaLetterInGString(_input) }? -> type(GStringPart),
pushMode(GSTRING_TYPE_SELECTOR_MODE)
;
SlashyGStringCharacter
: SlashyStringCharacter -> more
;

mode DOLLAR_SLASHY_GSTRING_MODE;
DollarSlashyGStringEnd

```

```

    : DollarSlashyGStringQuotationMarkEnd    -> type(GStringEnd), popMode
    ;
DollarSlashyGStringPart
    : Dollar { isFollowedByJavaLetterInGString(_input) }? -> type(GStringPart),
pushMode(GSTRING_TYPE_SELECTOR_MODE)
    ;
DollarSlashyGStringCharacter
    : DollarSlashyStringCharacter -> more
    ;

mode GSTRING_TYPE_SELECTOR_MODE;
GStringLBrace
    : '{ { this.enterParen(); } -> type(LBRACE), popMode, pushMode(DEFAULT_MODE)
    ;
GStringIdentifier
    : IdentifierInGString -> type(Identifier), popMode, pushMode(GSTRING_PATH_MODE)
    ;

mode GSTRING_PATH_MODE;
GStringPathPart
    : Dot IdentifierInGString
    ;
RollBackOne
    : . {
        // a trick to handle GStrings followed by EOF properly
        int readChar = _input.LA(-1);
        if (EOF == _input.LA(1) && ("" == readChar || '/' == readChar)) {
            setType(GStringEnd);
        } else {
            setChannel(HIDDEN);
        }
    } -> popMode
    ;

mode DEFAULT_MODE;
// character in the double quotation string. e.g. "a"
fragment
DqStringCharacter
    : ~["\r\n\\$]
    | EscapeSequence
    ;

// character in the single quotation string. e.g. 'a'
fragment
SqStringCharacter
    : ~[\r\n\\]

```

```

| EscapeSequence
;

// character in the triple double quotation string. e.g. """"a""""
fragment TdqStringCharacter
: ~["\"$]
| GStringQuotationMark { _input.LA(1) != '"' || _input.LA(2) != '"' || _input.LA(3) == '"' && (_input.LA(4) != '"'
|| _input.LA(5) != '"') }?
| EscapeSequence
;

// character in the triple single quotation string. e.g. """a"""
fragment TsqStringCharacter
: ~["\]
| SqStringQuotationMark { _input.LA(1) != '\'' || _input.LA(2) != '\'' || _input.LA(3) == '\'' && (_input.LA(4) !=
'\'' || _input.LA(5) != '\') }?
| EscapeSequence
;

// character in the slashy string. e.g. /a/
fragment SlashyStringCharacter
: SlashEscape
| Dollar { !isFollowedByJavaLetterInGString(_input) }?
| ~[/$\u0000]
;

// character in the dollar slashy string. e.g. $/a/$
fragment DollarSlashyStringCharacter
: DollarSlashEscape | DollarDollarEscape
| Slash { _input.LA(1) != '$' }?
| Dollar { !isFollowedByJavaLetterInGString(_input) }?
| ~[/$\u0000]
;

// Groovy keywords
AS      : 'as';
DEF     : 'def';
IN      : 'in';
TRAIT   : 'trait';
THREADSAFE : 'threadsafe'; // reserved keyword

// the reserved type name of Java10
VAR     : 'var';

// 3.9 Keywords
BuiltInPrimitiveType
: BOOLEAN
| CHAR

```



```
| BYTE
| SHORT
| INT
| LONG
| FLOAT
| DOUBLE
;

ABSTRACT    : 'abstract';
ASSERT      : 'assert';

fragment
BOOLEAN     : 'boolean';

BREAK       : 'break';

fragment
BYTE        : 'byte';

CASE        : 'case';
CATCH       : 'catch';

fragment
CHAR        : 'char';

CLASS       : 'class';
CONST       : 'const';
CONTINUE    : 'continue';
DEFAULT     : 'default';
DO          : 'do';

fragment
DOUBLE      : 'double';

ELSE        : 'else';
ENUM        : 'enum';
EXTENDS     : 'extends';
FINAL       : 'final';
FINALLY     : 'finally';

fragment
FLOAT       : 'float';

FOR         : 'for';
IF          : 'if';
GOTO        : 'goto';
IMPLEMENTS  : 'implements';
```

```
IMPORT      : 'import';
INSTANCEOF  : 'instanceof';
```

```
fragment
INT         : 'int';
```

```
INTERFACE   : 'interface';
```

```
fragment
LONG        : 'long';
```

```
NATIVE      : 'native';
NEW          : 'new';
PACKAGE      : 'package';
PRIVATE      : 'private';
PROTECTED    : 'protected';
PUBLIC       : 'public';
RETURN       : 'return';
```

```
fragment
SHORT       : 'short';
```

```
STATIC       : 'static';
STRICTFP     : 'strictfp';
SUPER        : 'super';
SWITCH       : 'switch';
SYNCHRONIZED : 'synchronized';
THIS         : 'this';
THROW        : 'throw';
THROWS       : 'throws';
TRANSIENT    : 'transient';
TRY          : 'try';
VOID         : 'void';
VOLATILE     : 'volatile';
WHILE        : 'while';
```

```
// 3.10.1 Integer Literals
```

```
IntegerLiteral
: ( DecimalIntegerLiteral
  | HexIntegerLiteral
  | OctalIntegerLiteral
  | BinaryIntegerLiteral
  ) (Underscore { require(errorIgnored, "Number ending with underscores is invalid", -1, true); })?
```

```
// !!! Error Alternative !!!
```

```

    | Zero ([0-9] { invalidDigitCount++; })+ { require(errorIgnored, "Invalid octal number", -(invalidDigitCount +
1), true); } IntegerTypeSuffix?
;

fragment
Zero
: '0'
;

fragment
DecimalIntegerLiteral
: DecimalNumeral IntegerTypeSuffix?
;

fragment
HexIntegerLiteral
: HexNumeral IntegerTypeSuffix?
;

fragment
OctalIntegerLiteral
: OctalNumeral IntegerTypeSuffix?
;

fragment
BinaryIntegerLiteral
: BinaryNumeral IntegerTypeSuffix?
;

fragment
IntegerTypeSuffix
: [LiIgG]
;

fragment
DecimalNumeral
: Zero
| NonZeroDigit (Digits? | Underscores Digits)
;

fragment
Digits
: Digit (DigitOrUnderscore* Digit)?
;

fragment
Digit
: Zero

```

| NonZeroDigit  
;

fragment  
NonZeroDigit  
: [1-9]  
;

fragment  
DigitOrUnderscore  
: Digit  
| Underscore  
;

fragment  
Underscores  
: Underscore+  
;

fragment  
Underscore  
: '\_'  
;

fragment  
HexNumeral  
: Zero [xX] HexDigits  
;

fragment  
HexDigits  
: HexDigit (HexDigitOrUnderscore\* HexDigit)?  
;

fragment  
HexDigit  
: [0-9a-fA-F]  
;

fragment  
HexDigitOrUnderscore  
: HexDigit  
| Underscore  
;

fragment  
OctalNumeral  
: Zero Underscores? OctalDigits

```

;

fragment
OctalDigits
: OctalDigit (OctalDigitOrUnderscore* OctalDigit)?
;

fragment
OctalDigit
: [0-7]
;

fragment
OctalDigitOrUnderscore
: OctalDigit
| Underscore
;

fragment
BinaryNumeral
: Zero [bB] BinaryDigits
;

fragment
BinaryDigits
: BinaryDigit (BinaryDigitOrUnderscore* BinaryDigit)?
;

fragment
BinaryDigit
: [01]
;

fragment
BinaryDigitOrUnderscore
: BinaryDigit
| Underscore
;

// 3.10.2 Floating-Point Literals

FloatingPointLiteral
: ( DecimalFloatingPointLiteral
| HexadecimalFloatingPointLiteral
) (Underscore { require(errorIgnored, "Number ending with underscores is invalid", -1, true); })?
;

fragment

```

DecimalFloatingPointLiteral  
: Digits? Dot Digits ExponentPart? FloatTypeSuffix?  
| Digits ExponentPart FloatTypeSuffix?  
| Digits FloatTypeSuffix  
;

fragment  
ExponentPart  
: ExponentIndicator SignedInteger  
;

fragment  
ExponentIndicator  
: [eE]  
;

fragment  
SignedInteger  
: Sign? Digits  
;

fragment  
Sign  
: [+\\-]  
;

fragment  
FloatTypeSuffix  
: [fFdDgG]  
;

fragment  
HexadecimalFloatingPointLiteral  
: HexSignificand BinaryExponent FloatTypeSuffix?  
;

fragment  
HexSignificand  
: HexNumeral Dot?  
| Zero [xX] HexDigits? Dot HexDigits  
;

fragment  
BinaryExponent  
: BinaryExponentIndicator SignedInteger  
;

fragment

BinaryExponentIndicator

: [pP]

;

fragment

Dot : '.'

;

// 3.10.3 Boolean Literals

BooleanLiteral

: 'true'

| 'false'

;

// 3.10.6 Escape Sequences for Character and String Literals

fragment

EscapeSequence

: Backslash [btnfrs"'\[]

| OctalEscape

| UnicodeEscape

| DollarEscape

| LineEscape

;

fragment

OctalEscape

: Backslash OctalDigit

| Backslash OctalDigit OctalDigit

| Backslash ZeroToThree OctalDigit OctalDigit

;

// Groovy allows 1 or more u's after the backslash

fragment

UnicodeEscape

: Backslash 'u' HexDigit HexDigit HexDigit HexDigit

;

fragment

ZeroToThree

: [0-3]

;

// Groovy Escape Sequences

fragment  
DollarEscape  
: Backslash Dollar  
;

fragment  
LineEscape  
: Backslash LineTerminator  
;

fragment  
LineTerminator  
: '\r'? '\n' | '\r'  
;

fragment  
SlashEscape  
: Backslash Slash  
;

fragment  
Backslash  
: '\\  
;

fragment  
Slash  
: '/'  
;

fragment  
Dollar  
: '\$'  
;

fragment  
GStringQuotationMark  
: ""  
;

fragment  
SqStringQuotationMark  
: "\"  
;

fragment  
TdqStringQuotationMark  
: """"  
;



```

;

fragment
TsycopgStringQuotationMark
: '\\\'
;

fragment
DollarSlashyGStringQuotationMarkBegin
: '$/'
;

fragment
DollarSlashyGStringQuotationMarkEnd
: '/$'
;

fragment
DollarSlashEscape
: '$/'
;

fragment
DollarDollarEscape
: '$$'
;

// 3.10.7 The Null Literal
NullLiteral
: 'null'
;

// Groovy Operators

RANGE_INCLUSIVE    : '..';
RANGE_EXCLUSIVE    : '..<';
SPREAD_DOT         : '*.';
SAFE_DOT           : '?.';
SAFE_CHAIN_DOT     : '??.';
ELVIS               : '?.';
METHOD_POINTER     : '.&';
METHOD_REFERENCE   : '::';
REGEX_FIND         : '=~';
REGEX_MATCH        : '==~';
POWER              : '**';
POWER_ASSIGN       : '**=';
SPACESHIP          : '<=>';
IDENTICAL          : '===';

```

```

NOT_IDENTICAL    : '!==';
ARROW            : '->';

// !internalPromise will be parsed as !in ternalPromise, so semantic predicates are necessary
NOT_INSTANCEOF   : '!instanceof' { isFollowedBy(_input, '\t', '\r', '\n') }?;
NOT_IN           : '!in'      { isFollowedBy(_input, '\t', '\r', '\n', '[', '(', '{') }?;

```

### // 3.11 Separators

```

LPAREN          : '(' { this.enterParen(); } -> pushMode(DEFAULT_MODE);
RPAREN          : ')' { this.exitParen(); } -> popMode;

LBRACE          : '{' { this.enterParen(); } -> pushMode(DEFAULT_MODE);
RBRACE          : '}' { this.exitParen(); } -> popMode;

LBRACK          : '[' { this.enterParen(); } -> pushMode(DEFAULT_MODE);
RBRACK          : ']' { this.exitParen(); } -> popMode;

SEMI           : ';';
COMMA          : ',';
DOT            : Dot;

```

### // 3.12 Operators

```

ASSIGN         : '==';
GT             : '>';
LT             : '<';
NOT            : '!';
BITNOT         : '~';
QUESTION       : '?';
COLON          : ':';
EQUAL          : '===';
LE             : '<=';
GE             : '>=';
NOTEQUAL       : '!==';
AND            : '&&';
OR             : '||';
INC            : '++';
DEC            : '--';
ADD            : '+';
SUB            : '-';
MUL            : '*';
DIV            : Slash;
BITAND         : '&';
BITOR          : '|';
XOR            : '^';
MOD            : '%';

```

```

ADD_ASSIGN    : '+=';
SUB_ASSIGN    : '-=';
MUL_ASSIGN    : '*=';
DIV_ASSIGN    : '/=';
AND_ASSIGN    : '&=';
OR_ASSIGN     : '|=';
XOR_ASSIGN    : '^=';
MOD_ASSIGN    : '%=';
LSHIFT_ASSIGN : '<<=';
RSHIFT_ASSIGN : '>>=';
URSHIFT_ASSIGN : '>>>=';
ELVIS_ASSIGN  : '?=';

```

```
// 3.8 Identifiers (must appear after all keywords in the grammar)
```

```
CapitalizedIdentifier
```

```

: JavaLetter {Character.isUpperCase(_input.LA(-1))}? JavaLetterOrDigit*
;

```

```
Identifier
```

```

: JavaLetter JavaLetterOrDigit*
;

```

```
fragment
```

```
IdentifierInGString
```

```

: JavaLetterInGString JavaLetterOrDigitInGString*
;

```

```
fragment
```

```
JavaLetter
```

```

: [a-zA-Z$_] // these are the "java letters" below 0x7F
| // covers all characters above 0x7F which are not a surrogate
  ~[\u0000-\u007F\uD800-\uDBFF]
  { isJavaIdentifierStartAndNotIdentifierIgnorable(_input.LA(-1)) }?
| // covers UTF-16 surrogate pairs encodings for U+10000 to U+10FFFF
  [\uD800-\uDBFF] [\uDC00-\uDFFF]
  { Character.isJavaIdentifierStart(Character.toCodePoint((char) _input.LA(-2), (char) _input.LA(-1))) }?
;

```

```
fragment
```

```
JavaLetterInGString
```

```

: JavaLetter { _input.LA(-1) != '$' }?
;

```

```
fragment
```

```
JavaLetterOrDigit
```

```

: [a-zA-Z0-9$_] // these are the "java letters or digits" below 0x7F
| // covers all characters above 0x7F which are not a surrogate
  ~[\u0000-\u007F\uD800-\uDBFF]
  { isJavaIdentifierPartAndNotIdentifierIgnorable(_input.LA(-1)) }?
| // covers UTF-16 surrogate pairs encodings for U+10000 to U+10FFFF
  [\uD800-\uDBFF] [\uDC00-\uDFFF]
  { Character.isJavaIdentifierPart(Character.toCodePoint((char) _input.LA(-2), (char) _input.LA(-1))) }?
;

fragment
JavaLetterOrDigitInGString
: JavaLetterOrDigit { _input.LA(-1) != '$' }?
;

fragment
ShCommand
: ~[\r\n\uFFFF]*
;

//
// Additional symbols not defined in the lexical specification
//

AT : '@';
ELLIPSIS : '...';

//
// Whitespace, line escape and comments
//
WS : ([\t]+ | LineEscape+) -> skip
;

// Inside (...) and [...] but not {...}, ignore newlines.
NL : LineTerminator { this.ignoreTokenInsideParens(); }
;

// Multiple-line comments (including groovydoc comments)
ML_COMMENT
: /*.*?*/ { this.ignoreMultiLineCommentConditionally(); } -> type(NL)
;

// Single-line comments
SL_COMMENT
: /*~[\r\n\uFFFF]* { this.ignoreTokenInsideParens(); } -> type(NL)
;

// Script-header comments.
// The very first characters of the file may be "#!". If so, ignore the first line.

```

```

SH_COMMENT
: '#' { require(errorIgnored || 0 == this.tokenIndex, "Shebang comment should appear at the first line", -2, true); }
ShCommand (LineTerminator '#' ShCommand)* -> skip
;

// Unexpected characters will be handled by groovy parser later.
UNEXPECTED_CHAR
: . { require(errorIgnored, "Unexpected character: " + getText().replace("'", "\'") + "'", -1, false); }
;

Found in path(s):
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/GroovyLexer.g4

```

## 1.137 jetty-setuid-java 1.0.4

### 1.137.1 Available under license :

No license file was found, but licenses were detected in source scan.

```

// All rights reserved. This program and the accompanying materials
// are made available under the terms of the Eclipse Public License v1.0
// and Apache License v2.0 which accompanies this distribution.
// The Eclipse Public License is available at
// The Apache License v2.0 is available at
// You may elect to redistribute this code under either of these licenses.

```

```

Found in path(s):
* /opt/cola/permits/1257333122_1642801905.86/0/jetty-setuid-java-1-0-4-sources-
jar/org/eclipse/jetty/setuid/SetUIDListener.java
* /opt/cola/permits/1257333122_1642801905.86/0/jetty-setuid-java-1-0-4-sources-
jar/org/eclipse/jetty/setuid/SetUIDServer.java
* /opt/cola/permits/1257333122_1642801905.86/0/jetty-setuid-java-1-0-4-sources-
jar/org/eclipse/jetty/setuid/SetUID.java
* /opt/cola/permits/1257333122_1642801905.86/0/jetty-setuid-java-1-0-4-sources-
jar/org/eclipse/jetty/setuid/Group.java
* /opt/cola/permits/1257333122_1642801905.86/0/jetty-setuid-java-1-0-4-sources-
jar/org/eclipse/jetty/setuid/RLimit.java
* /opt/cola/permits/1257333122_1642801905.86/0/jetty-setuid-java-1-0-4-sources-
jar/org/eclipse/jetty/setuid/Passwd.java

```

## 1.138 dropwizard-validation 2.0.28

### 1.138.1 Available under license :

No license file was found, but licenses were detected in source scan.

```

/*
* Hibernate Validator, declare and validate application constraints

```

\*  
\* License: Apache License, Version 2.0  
\* See the license.txt file in the root directory or <<http://www.apache.org/licenses/LICENSE-2.0>>.  
\*/

Found in path(s):

\* /opt/cola/permits/1635342750\_1681276708.9974823/0/dropwizard-validation-2-0-28-sources-1-jar/io/dropwizard/validation/InterpolationHelper.java

## 1.139 libmysqlclient 5.6.3

### 1.139.1 Available under license :

No license file was found, but licenses were detected in source scan.

/opt/cola/permits/1105515901\_1686127400.230177/0/mysql-5-6-3-m6-1-rhel5-i386-tar/MySQL-client-5.6.3\_m6-1.rhel5.i386.rpm: binary file matches  
/opt/cola/permits/1105515901\_1686127400.230177/0/mysql-5-6-3-m6-1-rhel5-i386-tar/MySQL-devel-5.6.3\_m6-1.rhel5.i386.rpm: binary file matches  
/opt/cola/permits/1105515901\_1686127400.230177/0/mysql-5-6-3-m6-1-rhel5-i386-tar/MySQL-embedded-5.6.3\_m6-1.rhel5.i386.rpm: binary file matches  
/opt/cola/permits/1105515901\_1686127400.230177/0/mysql-5-6-3-m6-1-rhel5-i386-tar/MySQL-server-5.6.3\_m6-1.rhel5.i386.rpm: binary file matches  
/opt/cola/permits/1105515901\_1686127400.230177/0/mysql-5-6-3-m6-1-rhel5-i386-tar/MySQL-shared-5.6.3\_m6-1.rhel5.i386.rpm: binary file matches  
/opt/cola/permits/1105515901\_1686127400.230177/0/mysql-5-6-3-m6-1-rhel5-i386-tar/MySQL-test-5.6.3\_m6-1.rhel5.i386.rpm: binary file matches

Found in path(s):

\* /bin/grep

## 1.140 javax-el-api 3.0.0

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# 1.142 jackson-module-afterburner 2.14.1

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## 1.143 metrics-health-checks 4.2.9

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Manifest-Version: 1.0

Automatic-Module-Name: com.codahale.metrics.health

Build-Jdk-Spec: 11

Bundle-Description: An addition to Metrics which provides the ability to run application-specific health checks, allowing you to check your application's health in production.

Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0.html>

Bundle-ManifestVersion: 2

Bundle-Name: Metrics Health Checks

Bundle-SymbolicName: io.dropwizard.metrics.healthchecks

Bundle-Version: 4.2.9

Created-By: Apache Maven Bundle Plugin 5.1.4

Export-Package: com.codahale.metrics.health;uses:="com.codahale.metrics";version="4.2.9",com.codahale.metrics.health.jvm;uses:="com.codahale.metrics.health,com.codahale.metrics.jvm";version="4.2.9",com.codahale.metrics.health.annotation;version="4.2.9"

Implementation-Title: Metrics Health Checks

Implementation-Version: 4.2.9

Import-Package: org.slf4j;version="[1.6.0,2.0.0)",com.codahale.metrics;version="[4.2,5)",com.codahale.metrics.health,com.codahale.metrics.health.annotation,com.codahale.metrics.jvm;version="[4.2,5)";resolution:=optional

Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.8))"



Tool: Bnd-5.1.1.202006162103

Found in path(s):

\* /opt/cola/permits/1303106868\_1649401354.9/0/metrics-healthchecks-4-2-9-jar/META-INF/MANIFEST.MF

## 1.144 aop-alliance 1.0

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## 1.145 groovy-docgenerator 3.0.9

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Found in path(s):

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\* /opt/cola/permits/1268275768\_1644387006.67/0/groovy-docgenerator-3-0-9-sources-jar/org/apache/groovy/docgenerator/overview-summary.html

\* /opt/cola/permits/1268275768\_1644387006.67/0/groovy-docgenerator-3-0-9-sources-jar/org/apache/groovy/docgenerator/template.package-summary.html

\* /opt/cola/permits/1268275768\_1644387006.67/0/groovy-docgenerator-3-0-9-sources-jar/org/apache/groovy/docgenerator/template.class.html

\* /opt/cola/permits/1268275768\_1644387006.67/0/groovy-docgenerator-3-0-9-sources-jar/org/apache/groovy/docgenerator/template.overview-frame.html

\* /opt/cola/permits/1268275768\_1644387006.67/0/groovy-docgenerator-3-0-9-sources-jar/org/apache/groovy/docgenerator/index.html

```
* /opt/cola/permits/1268275768_1644387006.67/0/groovy-docgenerator-3-0-9-sources-
jar/org/apache/groovy/docgenerator/template.allclasses-frame.html
* /opt/cola/permits/1268275768_1644387006.67/0/groovy-docgenerator-3-0-9-sources-
jar/org/apache/groovy/docgenerator/template.package-frame.html
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```

```
/*! normalize.css v2.1.0 | MIT License | git.io/normalize */
```

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```
* /opt/cola/permits/1268275768_1644387006.67/0/groovy-docgenerator-3-0-9-sources-
jar/org/apache/groovy/docgenerator/stylesheets.css
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*/
```

Found in path(s):

```
* /opt/cola/permits/1268275768_1644387006.67/0/groovy-docgenerator-3-0-9-sources-
jar/org/apache/groovy/docgenerator/DocGenerator.groovy
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* /opt/cola/permits/1268275768_1644387006.67/0/groovy-docgenerator-3-0-9-sources-
jar/org/apache/groovy/docgenerator/DocGenerator.properties
```

# 1.146 jaxb-api 2.3.1

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### 4.1.93.Final

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jar/io/netty/channel/unix/DomainDatagramSocketAddress.java
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jar/io/netty/channel/unix/SegmentedDatagramPacket.java
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jar/io/netty/channel/unix/NativeInetAddress.java
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* /opt/cola/permits/1698847988_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-
jar/io/netty/channel/unix/DomainSocketChannelConfig.java
* /opt/cola/permits/1698847988_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-
jar/netty_unix_errors.c
* /opt/cola/permits/1698847988_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-
jar/io/netty/channel/unix/DatagramSocketAddress.java
* /opt/cola/permits/1698847988_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-
jar/netty_unix_filedescriptor.c
* /opt/cola/permits/1698847988_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-
jar/io/netty/channel/unix/DomainSocketAddress.java
* /opt/cola/permits/1698847988_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-
jar/netty_unix_errors.h
* /opt/cola/permits/1698847988_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-
```

jar/netty\_unix\_socket.c

```
* /opt/cola/permits/1698847988_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-
jar/io/netty/channel/unix/Socket.java
* /opt/cola/permits/1698847988_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-
jar/io/netty/channel/unix/FileDescriptor.java
* /opt/cola/permits/1698847988_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-
jar/netty_unix_socket.h
* /opt/cola/permits/1698847988_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-
jar/io/netty/channel/unix/ServerDomainSocketChannel.java
* /opt/cola/permits/1698847988_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-
jar/io/netty/channel/unix/UnixChannel.java
```

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```
* /opt/cola/permits/1698847988_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-
jar/netty_unix_jni.h
* /opt/cola/permits/1698847988_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-
jar/io/netty/channel/unix/UnixChannelUtil.java
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\* /opt/cola/permits/1698847988\_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-jar/netty\_unix\_limits.c  
\* /opt/cola/permits/1698847988\_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-jar/io/netty/channel/unix/ErrorsStaticallyReferencedJniMethods.java  
\* /opt/cola/permits/1698847988\_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-jar/io/netty/channel/unix/PeerCredentials.java  
\* /opt/cola/permits/1698847988\_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-jar/netty\_unix\_limits.h  
\* /opt/cola/permits/1698847988\_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-jar/io/netty/channel/unix/SocketWritableByteChannel.java  
\* /opt/cola/permits/1698847988\_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-jar/netty\_unix\_util.h  
\* /opt/cola/permits/1698847988\_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-jar/netty\_unix\_util.c  
\* /opt/cola/permits/1698847988\_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-jar/io/netty/channel/unix/Limits.java

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\* /opt/cola/permits/1698847988\_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-jar/netty\_unix.h  
\* /opt/cola/permits/1698847988\_1685285741.888796/0/netty-transport-native-unix-common-4-1-93-final-sources-jar/netty\_unix.c

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\* /opt/cola/permits/1670772660\_1683726510.4201603/0/dropwizard-logging-2-0-28-sources-1-jar/io/dropwizard/logging/ResilientOutputStreamBase.java

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\* Called when either the command, option or positional parameter that has this preprocessor configured was

\* recognized by the picocli parser.

\* <p>Implementors are free to modify one or more of the specified command line arguments before they are

\* processed by the picocli parser (or by the option's { @link IParameterConsumer parameter consumer }, if one is specified).

```

* </p><p>
* Implementors may optionally <em>consume</em> one or more of the specified command line arguments:
* a return value of { @code true } signals that the preprocessor consumed the parameter:
* picocli should skip further processing of this option or positional parameter,
* and the preprocessor implementation takes responsibility for assigning the
* option or positional parameter a value. A return value of { @code false } means that picocli should
* process the stack as usual for this option or positional parameter, and picocli is responsible for
* assigning this option or positional parameter a value.
* </p><p>
* For a command, returning { @code true } signals that the preprocessor takes responsibility for parsing all
* options and positional parameters for this command, and takes responsibility for validating constraints like
* whether all required options and positional parameters were specified.
* A return value of { @code false } means that picocli should
* process the stack as usual for this command, and picocli is responsible for validation.
* Command preprocessors can signal back to the picocli parser when they detect that the user requested version
* information or usage help by putting a value of { @code true } in the specified
* { @code info } map for keys { @code versionHelpRequested } or { @code usageHelpRequested }, respectively.
* </p><p>
* If the user input is invalid, implementations should throw a { @link ParameterException }
* with a message to display to the user.
* </p>
* @param args the remaining command line arguments that follow the matched argument
*         (the matched argument is not on the stack anymore)
* @param commandSpec the command or subcommand that was matched (if the specified { @code argSpec } is
*         { @code null }), or the command that the matched option or positional parameter belongs to
* @param argSpec the option or positional parameter for which to pre-process command line arguments
*         (may be { @code null } when this method is called for a subcommand that was matched)
* @param info a map containing additional information on the current parser state,
*         including whether the option parameter was attached to the option name with
*         a `=` separator, whether quotes have already been stripped off the option, etc.
* Implementations may modify this map to communicate back to the picocli parser.
* Supported values:
* <table>
* <tr>
* <th>key</th><th>valid values</th><th>type</th>
* </tr>
* <tr>
* <td>separator</td><td>" (empty string): attached without separator, ' ' (space): not attached, (any
other string): option name was attached to option param with specified separator</td>
* <td>java.lang.String</td>
* </tr>
* <tr>
* <td>negated</td>
* <td>{ @code true } : the option or positional parameter is a { @linkplain Option#negatable()
negated } option/parameter, { @code false } : the option or positional parameter is not a negated
option/parameter</td>
* <td>java.lang.Boolean</td>
* </tr>

```

```

*      <tr>
*      <td>unquoted</td>
*      <td>{@code true}: quotes surrounding the value have already been stripped off, {@code false}:
quotes surrounding the value have not yet been stripped off</td>
*      <td>java.lang.Boolean</td>
*    </tr>
*    <tr>
*      <td>versionHelpRequested</td>
*      <td>{@code true}: version help was requested, {@code false}: version help was not
requested</td>
*      <td>java.lang.Boolean</td>
*    </tr>
*    <tr>
*      <td>usageHelpRequested</td>
*      <td>{@code true}: usage help was requested, {@code false}: usage help was not requested</td>
*      <td>java.lang.Boolean</td>
*    </tr>
*  </table>
*
* @returns true if the preprocessor consumed the parameter
*       and picocli should skip further processing of the stack for this option or positional parameter;
*       false if picocli should continue processing the stack for this option or positional parameter
* @throws ParameterException if the user input is invalid
*/

```

Found in path(s):

\* /opt/cola/permits/1177083937\_1625028998.96/0/picocli-4-6-1-sources-jar/picocli/CommandLine.java

## 1.151 jackson-module-parameter-names

### 2.14.1

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Manifest-Version: 1.0

Bundle-License: <http://www.apache.org/licenses/LICENSE-2.0.txt>

Bundle-SymbolicName: com.fasterxml.jackson.module.jackson-module-parameter-names

Implementation-Vendor-Id: com.fasterxml.jackson.module

Specification-Title: Jackson-module-parameter-names

Bundle-DocURL: <https://github.com/FasterXML/jackson-modules-java8/jackson-module-parameter-names>

Import-Package: com.fasterxml.jackson.annotation;version="[2.14,3)",com.fasterxml.jackson.core;version="[2.14,3)",com.fasterxml.jackson.core.util;version="[2.14,3)",com.fasterxml.jackson.databind;version="[2.14,3)",com.fasterxml.jackson.databind.cfg;version="[2.14,3)",com.fasterxml.jackson.databind.introspect;version="[2.14,3)",com.fasterxml.ja

ckson.databind.module;version="[2.14,3)"  
Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.8))"  
Export-Package: com.fasterxml.jackson.module.paramnames;version="2.14.1";uses="com.fasterxml.jackson.annotation,com.fasterxml.jackson.core,com.fasterxml.jackson.databind,com.fasterxml.jackson.databind.cfg,com.fasterxml.jackson.databind.introspect,com.fasterxml.jackson.databind.module"  
Bundle-Name: Jackson-module-parameter-names  
Multi-Release: true  
Build-Jdk-Spec: 1.8  
Bundle-Description: Add-on module for Jackson (<http://jackson.codehaus.org>) to support introspection of method/constructor parameter names, without having to add explicit property name annotation.  
Implementation-Title: Jackson-module-parameter-names  
Implementation-Version: 2.14.1  
Bundle-ManifestVersion: 2  
Specification-Vendor: FasterXML  
Bundle-Vendor: FasterXML  
Tool: Bnd-6.3.1.202206071316  
Implementation-Vendor: FasterXML  
Bundle-Version: 2.14.1  
X-Compile-Target-JDK: 1.8  
X-Compile-Source-JDK: 1.8  
Created-By: Apache Maven Bundle Plugin 5.1.8  
Specification-Version: 2.14.1

Found in path(s):

\* /opt/cola/permits/1491322405\_1672923553.639012/0/jackson-module-parameter-names-2-14-1-jar/META-INF/MANIFEST.MF

# 1.152 libpng 1.6.37

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```
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*
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* Copyright (c) 2016-2017 Glenn Randers-Pehrson
* Written by Mike Klein and Matt Sarett, Google, Inc.
* Derived from arm/arm_init.c
*
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*/
```

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# 1.157 jackson 2.15.0

## 1.157.1 Available under license :

# Jackson JSON processor

Jackson is a high-performance, Free/Open Source JSON processing library. It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has been in development since 2007.

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# 1.158 servlet-api 3.1.0

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# 1.160 jetty-util 9.4.51.v20230217

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## Eclipse

The following artifacts are EPL.

\* org.eclipse.jetty.orbit:org.eclipse.jdt.core

The following artifacts are EPL and ASL2.

\* org.eclipse.jetty.orbit:javax.security.auth.message

The following artifacts are EPL and CDDL 1.0.

\* org.eclipse.jetty.orbit:javax.mail.glassfish

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## Oracle

The following artifacts are CDDL + GPLv2 with classpath exception.

<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

\* javax.servlet:javax.servlet-api

\* javax.annotation:javax.annotation-api

\* javax.transaction:javax.transaction-api

\* javax.websocket:javax.websocket-api

-----

## Oracle OpenJDK

If ALPN is used to negotiate HTTP/2 connections, then the following artifacts may be included in the distribution or downloaded when ALPN module is selected.

\* java.sun.security.ssl

These artifacts replace/modify OpenJDK classes. The modifications are hosted at github and both modified and original are under GPL v2 with classpath exceptions.

<http://openjdk.java.net/legal/gplv2+ce.html>

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The following artifacts are licensed by the OW2 Foundation according to the terms of <http://asm.ow2.org/license.html>

org.ow2.asm:asm-commons

org.ow2.asm:asm

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Apache

The following artifacts are ASL2 licensed.

org.apache.taglibs:taglibs-standard-spec  
org.apache.taglibs:taglibs-standard-impl

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MortBay

The following artifacts are ASL2 licensed. Based on selected classes from following Apache Tomcat jars, all ASL2 licensed.

org.mortbay.jasper:apache-jsp  
org.apache.tomcat:tomcat-jasper  
org.apache.tomcat:tomcat-juli  
org.apache.tomcat:tomcat-jsp-api  
org.apache.tomcat:tomcat-el-api  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-api  
org.apache.tomcat:tomcat-util-scan  
org.apache.tomcat:tomcat-util

org.mortbay.jasper:apache-el  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-el-api

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<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

org.eclipse.jetty.toolchain:jetty-schemas

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Assorted

The UnixCrypt.java code implements the one way cryptography used by Unix systems for simple password protection. Copyright 1996 Aki Yoshida, modified April 2001 by Iris Van den Broeke, Daniel Deville.

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jar/io/netty/handler/codec/mqtt/MqttUnsubAckPayload.java
* /opt/cola/permits/1698848123_1685285751.427286/0/netty-codec-mqtt-4-1-93-final-sources-
jar/io/netty/handler/codec/mqtt/MqttMessageIdAndPropertiesVariableHeader.java
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* /opt/cola/permits/1698848123_1685285751.427286/0/netty-codec-mqtt-4-1-93-final-sources-
jar/io/netty/handler/codec/mqtt/MqttSubscriptionOption.java
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jar/io/netty/handler/codec/mqtt/MqttPublishVariableHeader.java  
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jar/io/netty/handler/codec/mqtt/MqttIdentifierRejectedException.java  
\* /opt/cola/permits/1698848123\_1685285751.427286/0/netty-codec-mqtt-4-1-93-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttConnectReturnCode.java  
\* /opt/cola/permits/1698848123\_1685285751.427286/0/netty-codec-mqtt-4-1-93-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttFixedHeader.java  
\* /opt/cola/permits/1698848123\_1685285751.427286/0/netty-codec-mqtt-4-1-93-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttUnsubAckMessage.java  
\* /opt/cola/permits/1698848123\_1685285751.427286/0/netty-codec-mqtt-4-1-93-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttMessageFactory.java  
\* /opt/cola/permits/1698848123\_1685285751.427286/0/netty-codec-mqtt-4-1-93-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttSubscribeMessage.java  
\* /opt/cola/permits/1698848123\_1685285751.427286/0/netty-codec-mqtt-4-1-93-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttUnacceptableProtocolVersionException.java  
\* /opt/cola/permits/1698848123\_1685285751.427286/0/netty-codec-mqtt-4-1-93-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttVersion.java  
\* /opt/cola/permits/1698848123\_1685285751.427286/0/netty-codec-mqtt-4-1-93-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttSubscribePayload.java  
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jar/io/netty/handler/codec/mqtt/MqttEncoder.java  
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jar/io/netty/handler/codec/mqtt/MqttSubAckPayload.java  
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jar/io/netty/handler/codec/mqtt/MqttUnsubscribePayload.java  
\* /opt/cola/permits/1698848123\_1685285751.427286/0/netty-codec-mqtt-4-1-93-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttPubAckMessage.java  
\* /opt/cola/permits/1698848123\_1685285751.427286/0/netty-codec-mqtt-4-1-93-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttConnAckMessage.java  
\* /opt/cola/permits/1698848123\_1685285751.427286/0/netty-codec-mqtt-4-1-93-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttConnAckVariableHeader.java  
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jar/io/netty/handler/codec/mqtt/MqttQoS.java

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\* /opt/cola/permits/1223666029\_1635937309.22/0/groovy-nio-3-0-9-sources-jar/org/codehaus/groovy/runtime/NioGroovyMethods.java  
\* /opt/cola/permits/1223666029\_1635937309.22/0/groovy-nio-3-0-9-sources-jar/org/apache/groovy/nio/runtime/WritablePath.java  
\* /opt/cola/permits/1223666029\_1635937309.22/0/groovy-nio-3-0-9-sources-jar/org/apache/groovy/nio/extensions/NioExtensions.java  
\* /opt/cola/permits/1223666029\_1635937309.22/0/groovy-nio-3-0-9-sources-jar/org/codehaus/groovy/runtime/WritablePath.java

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\* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollDomainDatagramChannelConfig.java

\* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/SegmentedDatagramPacket.java

\* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollDomainDatagramChannel.java

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/**
 * Set the { @code TCP_MD5SIG } option on the socket. See { @code linux/tcp.h } for more details.
 * Keys can only be set on, not read to prevent a potential leak, as they are confidential.
 * Allowing them being read would mean anyone with access to the channel could get them.
 */
```

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```
* /opt/cola/permits/1698847981_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-
jar/io/netty/channel/epoll/EpollServerSocketChannelConfig.java
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- \* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollDomainSocketChannel.java
- \* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollChannelConfig.java
- \* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollRecvByteAllocatorStreamingHandle.java
- \* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollServerDomainSocketChannel.java
- \* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollMode.java
- \* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/AbstractEpollStreamChannel.java
- \* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollRecvByteAllocatorHandle.java
- \* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/AbstractEpollServerChannel.java
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- \* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollEventArray.java
- \* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollServerChannelConfig.java

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\* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/NativeDatagramPacketArray.java  
\* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/package-info.java  
\* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/Epoll.java  
\* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollTcpInfo.java  
\* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollChannelOption.java  
\* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollDatagramChannel.java  
\* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollEventLoopGroup.java  
\* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollServerSocketChannel.java  
\* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollSocketChannel.java  
\* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/EpollEventLoop.java

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\* Set the { @code TCP\_MD5SIG } option on the socket. See { @code linux/tcp.h } for more details.

\* Keys can only be set on, not read to prevent a potential leak, as they are confidential.

\* Allowing them being read would mean anyone with access to the channel could get them.

```
*/
/**
 * Set the { @code TCP_QUICKACK } option on the socket.
 * See <a href="https://linux.die.net/man/7/tcp">TCP_QUICKACK</a>
 * for more details.
 */
```

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```
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- \* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/LinuxSocket.java
- \* /opt/cola/permits/1698847981\_1685285755.994296/0/netty-transport-classes-epoll-4-1-93-final-sources-jar/io/netty/channel/epoll/NativeStaticallyReferencedJniMethods.java

# 1.168 j2objc-annotations 1.3

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Found in path(s):

\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/ByteString.kt  
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Found in path(s):

\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/commonMain/okio/internal/SegmentedByteString.kt  
\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/commonMain/okio/internal/RealBufferedSink.kt  
\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/commonMain/okio/internal/RealBufferedSource.kt

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\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/Timeout.kt  
\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/DeflaterSink.kt  
\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/BufferedSource.kt  
\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/ForwardingSink.kt  
\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/AsyncTimeout.kt  
\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/commonMain/okio/SegmentPool.kt  
\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/InflaterSource.kt  
\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/BufferedSink.kt  
\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/ForwardingSource.kt  
\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/RealBufferedSink.kt  
\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-

jar/jvmMain/okio/RealBufferedSource.kt

- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/GzipSink.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/commonMain/okio/Segment.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/GzipSource.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/Sink.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/JvmOkio.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/Buffer.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/Source.kt

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- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/HashingSource.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/Pipe.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/HashingSink.kt

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- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/commonMain/okio/BufferedSink.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/commonMain/okio/RealBufferedSource.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/commonMain/okio/RealBufferedSink.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/commonMain/okio/Buffer.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/commonMain/okio/internal/Buffer.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/commonMain/okio/BufferedSource.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/commonMain/okio/Timeout.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/commonMain/okio/Sink.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/commonMain/okio/Source.kt

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- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/commonMain/okio/PeekSource.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/-DeprecatedUpgrade.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/-DeprecatedOkio.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/Throttler.kt
- \* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/-DeprecatedUtf8.kt

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\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/ForwardingTimeout.kt  
\* /opt/cola/permits/1779890159\_1693238544.8866055/0/okio-2-5-0-sources-6-jar/jvmMain/okio/SegmentedByteString.kt  
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```
* /opt/cola/permits/1779890159_1693238544.8866055/0/okio-2-5-0-sources-6-jar/commonMain/okio/-Base64.kt
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## 1.170 swagger-annotations 2.0.7

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```
* /opt/cola/permits/1618783067_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-
jar/io/swagger/v3/oas/annotations/media/DiscriminatorMapping.java
* /opt/cola/permits/1618783067_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-
jar/io/swagger/v3/oas/annotations/Operation.java
* /opt/cola/permits/1618783067_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-
jar/io/swagger/v3/oas/annotations/callbacks/Callbacks.java
* /opt/cola/permits/1618783067_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-
jar/io/swagger/v3/oas/annotations/media/Schema.java
* /opt/cola/permits/1618783067_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-
```

jar/io/swagger/v3/oas/annotations/links/LinkParameter.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/headers/Header.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/OpenAPIDefinition.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/servers/Servers.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/responses/ApiResponse.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/security/OAuthScope.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/Parameter.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/info/License.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/parameters/RequestBody.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/servers/ServerVariable.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/tags/Tags.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/links/Link.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/security/OAuthFlows.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/Parameters.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/security/SecurityRequirement.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/media/ExampleObject.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/security/SecuritySchemes.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/ExternalDocumentation.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/security/SecurityScheme.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/info/Contact.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/tags/Tag.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/media/Encoding.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/media/Content.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-  
jar/io/swagger/v3/oas/annotations/extensions/Extensions.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-

jar/io/swagger/v3/oas/annotations/info/Info.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-jar/io/swagger/v3/oas/annotations/servers/Server.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-jar/io/swagger/v3/oas/annotations/security/OAuthFlow.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-jar/io/swagger/v3/oas/annotations/security/SecurityRequirements.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-jar/io/swagger/v3/oas/annotations/Hidden.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-jar/io/swagger/v3/oas/annotations/callbacks/Callback.java  
\* /opt/cola/permits/1618783067\_1681509181.9620898/0/swagger-annotations-2-0-7-sources-1-jar/io/swagger/v3/oas/annotations/responses/ApiResponse.java

# 1.171 jetty-webapp 9.4.51.v20230217

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The following artifacts are EPL.  
\* org.eclipse.jetty.orbit:org.eclipse.jdt.core

The following artifacts are EPL and ASL2.  
\* org.eclipse.jetty.orbit:javafx.security.auth.message

The following artifacts are EPL and CDDL 1.0.  
\* org.eclipse.jetty.orbit:javafx.mail.glassfish

-----  
Oracle

The following artifacts are CDDL + GPLv2 with classpath exception.  
<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

\* javax.servlet:javax.servlet-api  
\* javax.annotation:javax.annotation-api  
\* javax.transaction:javax.transaction-api  
\* javax.websocket:javax.websocket-api

-----  
Oracle OpenJDK



If ALPN is used to negotiate HTTP/2 connections, then the following artifacts may be included in the distribution or downloaded when ALPN module is selected.

\* java.sun.security.ssl

These artifacts replace/modify OpenJDK classes. The modifications are hosted at github and both modified and original are under GPL v2 with classpath exceptions.

<http://openjdk.java.net/legal/gplv2+ce.html>

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OW2

The following artifacts are licensed by the OW2 Foundation according to the terms of <http://asm.ow2.org/license.html>

org.ow2.asm:asm-commons

org.ow2.asm:asm

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Apache

The following artifacts are ASL2 licensed.

org.apache.taglibs:taglibs-standard-spec

org.apache.taglibs:taglibs-standard-impl

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MortBay

The following artifacts are ASL2 licensed. Based on selected classes from following Apache Tomcat jars, all ASL2 licensed.

org.mortbay.jasper:apache-jsp

org.apache.tomcat:tomcat-jasper

org.apache.tomcat:tomcat-juli

org.apache.tomcat:tomcat-jsp-api

org.apache.tomcat:tomcat-el-api

org.apache.tomcat:tomcat-jasper-el

org.apache.tomcat:tomcat-api

org.apache.tomcat:tomcat-util-scan

org.apache.tomcat:tomcat-util

org.mortbay.jasper:apache-el

org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-el-api

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Mortbay

The following artifacts are CDDL + GPLv2 with classpath exception.

<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

org.eclipse.jetty.toolchain:jetty-schemas

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Assorted

The UnixCrypt.java code implements the one way cryptography used by Unix systems for simple password protection. Copyright 1996 Aki Yoshida, modified April 2001 by Iris Van den Broeke, Daniel Deville.

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`/opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeFlatMapSingle.java`

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeFlatMapCompletable.java

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\*/

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In short, changes to public signatures of these classes will not be accounted for in the versioning of RxJava.

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jar/rx/internal/operators/BackpressureUtils.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/producers/ProducerObserverArbiter.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/producers/SingleDelayedProducer.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/producers/QueuedProducer.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/producers/SingleProducer.java  
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jar/rx/internal/producers/ProducerArbiter.java  
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 * Modified from http://www.javacodegeeks.com/2013/08/simple-and-lightweight-pool-implementation.html  
 */
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jar/rx/internal/util/OpenHashSet.java  
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\* Original location: <https://github.com/JCTools/JCTools/blob/master/jctools-core/src/main/java/org/jctools/queues/atomic/SpScAtomicArrayQueue.java>  
\*/

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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/atomic/SpScExactAtomicArrayQueue.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/atomic/SpScAtomicArrayQueue.java

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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/Observable.java

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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/SingleDoAfterTerminate.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/SingleSubscriber.java

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\*/

Found in path(s):

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/atomic/SpscLinkedAtomicQueue.java  
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core/src/main/java/org/jctools/queues/SpSCArrayQueue.java

\*/

Found in path(s):

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/unsafe/SpSCArrayQueue.java

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\*/

Found in path(s):

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/atomic/LinkedQueueNode.java

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\*/

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core/src/main/java/org/jctools/queues/atomic/SpscUnboundedAtomicArrayQueue.java
 */
```

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```
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
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*/
```

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```
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jar/rx/internal/operators/OperatorOnBackpressureDrop.java
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
jar/rx/exceptions/OnCompletedFailedException.java
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
jar/rx/internal/operators/OperatorSubscribeOn.java
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/Scheduler.java
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
jar/rx/observers/SerializedSubscriber.java
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
jar/rx/internal/operators/CompletableOnSubscribeMerge.java
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- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/plugins/RxJavaObservableExecutionHookDefault.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/subjects/PublishSubject.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeAutoConnect.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorTakeLast.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/observables/ConnectableObservable.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorElementAt.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorReplay.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeSingle.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/Producer.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorToObservableList.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/RxRingBuffer.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Action1.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/subjects/BehaviorSubject.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/subjects/SubjectSubscriptionManager.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorTimeoutWithSelector.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/Notification.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Func6.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/schedulers/NewThreadScheduler.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/FuncN.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorDoOnUnsubscribe.java
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- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeJoin.java
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- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/observers/TestObserver.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Action3.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/Completable.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorOnBackpressureBuffer.java
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- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-

jar/rx/internal/operators/OperatorTakeWhile.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/CompletableOnSubscribeMergeDelayErrorIterable.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorDematerialize.java  
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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/observables/SyncOnSubscribe.java  
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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/exceptions/UnsubscribeFailedException.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/CompletableOnSubscribeTimeout.java  
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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/BlockingOperatorNext.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/schedulers/SleepingAction.java  
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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/exceptions/OnErrorNotImplementedException.java  
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- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/observers/SerializedObserver.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorIgnoreElements.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Action2.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/schedulers/EventLoopsScheduler.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/plugins/RxJavaErrorHandler.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorWithLatestFromMany.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Functions.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/Observer.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/CachedObservable.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorDoOnSubscribe.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorObserveOn.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Action6.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Func4.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/schedulers/ImmediateScheduler.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Action7.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/BlockingOperatorToIterator.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/observables/GroupedObservable.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorTakeUntilPredicate.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorThrottleFirst.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/Subscriber.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorTimeoutBase.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorAll.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Action5.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorTimeInterval.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeDoOnEach.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-



jar/rx/internal/operators/OperatorMapNotification.java  
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jar/rx/internal/operators/SingleDoOnEvent.java  
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- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorZip.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/BlockingOperatorMostRecent.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeToObservableFuture.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/subjects/ReplaySubject.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Func1.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/subscriptions/Subscriptions.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorAny.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/subjects/SerializedSubject.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/exceptions/CompositeException.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/ActionN.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Func0.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/subjects/AsyncSubject.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/schedulers/package-info.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorSerialize.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/exceptions/OnErrorThrowable.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/schedulers/Schedulers.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorScan.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/CompletableOnSubscribeConcatIterable.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Func9.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/SubscriptionList.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/observers/Observers.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeFromIterable.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorUnsubscribeOn.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/schedulers/TimeInterval.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Func5.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeRange.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/exceptions/OnErrorFailedException.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/observables/BlockingObservable.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/schedulers/GenericScheduledExecutorService.java
- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Func7.java

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* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
jar/rx/observers/SafeSubscriber.java
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Func3.java
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
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core/src/main/java/org/jctools/queues/ConcurrentCircularArrayQueue.java
*/
```

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```
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/CompletableSubscriber.java  
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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/unsafe/ConcurrentSequencedCircularArrayQueue.java  
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\* Original location: <https://github.com/JCTools/JCTools/blob/master/jctools-core/src/main/java/org/jctools/queues/atomic/BaseLinkedAtomicQueue.java>  
\*/

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\* Original location: <https://github.com/JCTools/JCTools/blob/master/jctools-core/src/main/java/org/jctools/queues/MpscLinkedQueue.java>  
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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorMulticast.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorDebounceWithSelector.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/SingleOnSubscribeDelaySubscriptionOther.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/util/RxThreadFactory.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorOnBackpressureLatest.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/util/atomic/SpSCLinkedArrayQueue.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OnSubscribeDelaySubscriptionWithSelector.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorWindowWithObservable.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/schedulers/ExecutorScheduler.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorDistinctUntilChanged.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorPublish.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorDistinct.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/schedulers/NewThreadWorker.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/schedulers/ScheduledAction.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorSampleWithObservable.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-

jar/rx/internal/operators/OperatorBufferWithTime.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OnSubscribeDelaySubscription.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorSkipUntil.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorEagerConcatMap.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OnSubscribeTimerPeriodically.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorBufferWithStartEndObservable.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorBufferWithSize.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorWithLatestFrom.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OnSubscribeTimerOnce.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorBufferWithSingleObservable.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorDebounceWithTime.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorTakeTimed.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorSwitch.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorRetryWithPredicate.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorSampleWithTime.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-  
jar/rx/internal/operators/OperatorWindowWithSize.java  
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This package contains code that relies on sun.misc.Unsafe. Before using it you MUST assert  
UnsafeAccess.isUnsafeAvailable() == true

Much of the code in this package comes from or is inspired by the JCTools project:  
<https://github.com/JCTools/JCTools>

JCTools has now published artifacts (<https://github.com/JCTools/JCTools/issues/17>) so RxJava could add JCTools  
as a "shadow" dependency (<https://github.com/ReactiveX/RxJava/issues/1735>).

RxJava has a "zero dependency" policy for the core library, so if we do add it as a dependency, it won't be an  
externally visible dependency that results in a separate jar.

The license for the JCTools code is <https://github.com/JCTools/JCTools/blob/master/LICENSE>

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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/plugins/RxJavaHooks.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeOnAssemblyCompletable.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/subscriptions/Unsubscribed.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/ActionNotificationObserver.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/BackpressureOverflow.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/observers/SafeCompletableSubscriber.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/exceptions/package-info.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeCreate.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/EmptyObservableHolder.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-

jar/rx/internal/operators/SingleDelay.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/SingleTakeUntilCompletable.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/ActionSubscriber.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/InternalObservableUtils.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/plugins/RxJavaSingleExecutionHookDefault.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/observables/package-info.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/exceptions/AssemblyStackTraceException.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/observers/AsyncCompletableSubscriber.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/subjects/package-info.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/SingleFromObservable.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/SingleOnErrorReturn.java  
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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Cancellable.java  
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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/plugins/package-info.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/SingleDoOnUnsubscribe.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeOnAssemblySingle.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/ObserverSubscriber.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/SingleObserveOn.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/plugins/RxJavaSingleExecutionHook.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/SingleLiftObservableOperator.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/singles/package-info.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/annotations/package-info.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/SingleFromCallable.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeLift.java  
 \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeFlattenIterable.java  
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 \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/observers/AssertableSubscriberObservable.java  
 \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/schedulers/SchedulePeriodicHelper.java  
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 \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/schedulers/SchedulerWhen.java  
 \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/observers/AssertableSubscriber.java  
 \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/Emitter.java  
 \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeThrow.java  
 \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/subscriptions/package-info.java  
 \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/package-info.java  
 \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/CompletableFlatMapSingleToCompletable.java  
 \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/SingleTimeout.java  
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 \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/SingleFromEmitter.java  
 \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/NeverObservableHolder.java  
 \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/SingleTakeUntilObservable.java  
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\* Inspired from <https://code.google.com/p/guava-libraries/source/browse/guava/src/com/google/common/annotations/Beta.java>  
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/\*\*

\* This plugin class provides 2 ways to customize {@link Scheduler} functionality

\* 1. You may redefine entire schedulers, if you so choose. To do so, override

\* the 3 methods that return Scheduler (io(), computation(), newThread()).

\* 2. You may wrap/decorate an {@link Action0}, before it is handed off to a Scheduler. The system-

\* supplied Schedulers (Schedulers.ioScheduler, Schedulers.computationScheduler,

\* Scheduler.newThreadScheduler) all use this hook, so it's a convenient way to

\* modify Scheduler functionality without redefining Schedulers wholesale.

\*

\* Also, when redefining Schedulers, you are free to use/not use the onSchedule decoration hook.

\* <p>

\* See {@link RxJavaPlugins} or the RxJava GitHub Wiki for information on configuring plugins:

\* <a

href="https://github.com/ReactiveX/RxJava/wiki/Plugins">https://github.com/ReactiveX/RxJava/wiki/Plugins</a>.

\*/

Found in path(s):



\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/plugins/RxJavaSchedulersHook.java

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\* Originally from <https://code.google.com/p/guava->

[libraries/source/browse/guava/src/com/google/common/annotations/Beta.java](https://code.google.com/p/guava-)

\*/

Found in path(s):

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/annotations/Beta.java

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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/ExceptionsUtils.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeConcatMap.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeCollect.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/DeferredScalarSubscriber.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/DeferredScalarSubscriberSafe.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribePublishMulticast.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeReduceSeed.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/SingleOperatorOnErrorResumeNext.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/SingleOperatorZip.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/schedulers/SchedulerLifecycle.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/SuppressAnimalSniffer.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeFromCallable.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/SingleOnSubscribeUsing.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeTakeLastOne.java  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeReduce.java

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*/
```

Found in path(s):

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-

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core/src/main/java/org/jctools/queues/QueueProgressIndicators.java
 */
```

Found in path(s):

`/opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/unsafe/QueueProgressIndicators.java`

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 *
 * Original License: https://github.com/JCTools/JCTools/blob/master/LICENSE
 * Original location: https://github.com/JCTools/JCTools/blob/master/jctools-
core/src/main/java/org/jctools/util/UnsafeAccess.java
 */
```

Found in path(s):

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/unsafe/UnsafeAccess.java

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\* Original location: <https://github.com/JCTools/JCTools/blob/master/jctools-core/src/main/java/org/jctools/queues/atomic/AtomicReferenceArrayQueue.java>  
\*/

Found in path(s):

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/atomic/AtomicReferenceArrayQueue.java

## 1.173 j2objc-annotations 2.8

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\* /opt/cola/permits/1704412778\_1685746927.655543/0/j2objc-annotations-2-8-sources-jar/com/google/j2objc/annotations/Weak.java

\* /opt/cola/permits/1704412778\_1685746927.655543/0/j2objc-annotations-2-8-sources-jar/com/google/j2objc/annotations/AutoreleasePool.java

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\* /opt/cola/permits/1704412778\_1685746927.655543/0/j2objc-annotations-2-8-sources-jar/com/google/j2objc/annotations/OnDealloc.java

\* /opt/cola/permits/1704412778\_1685746927.655543/0/j2objc-annotations-2-8-sources-jar/com/google/j2objc/annotations/J2ObjCIncompatible.java

\* /opt/cola/permits/1704412778\_1685746927.655543/0/j2objc-annotations-2-8-sources-jar/com/google/j2objc/annotations/LoopTranslation.java

\* /opt/cola/permits/1704412778\_1685746927.655543/0/j2objc-annotations-2-8-sources-jar/com/google/j2objc/annotations/RetainedLocalRef.java

\* /opt/cola/permits/1704412778\_1685746927.655543/0/j2objc-annotations-2-8-sources-jar/com/google/j2objc/annotations/ReflectionSupport.java

\* /opt/cola/permits/1704412778\_1685746927.655543/0/j2objc-annotations-2-8-sources-jar/com/google/j2objc/annotations/Property.java

\* /opt/cola/permits/1704412778\_1685746927.655543/0/j2objc-annotations-2-8-sources-jar/com/google/j2objc/annotations/WeakOuter.java

\* /opt/cola/permits/1704412778\_1685746927.655543/0/j2objc-annotations-2-8-sources-jar/com/google/j2objc/annotations/RetainedWith.java

\* /opt/cola/permits/1704412778\_1685746927.655543/0/j2objc-annotations-2-8-sources-jar/com/google/j2objc/annotations/ObjectiveCName.java

## 1.174 guice-assistedinject 4.2.3

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```
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/CannotCompileException.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/bytecode/ClassFilePrinter.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/bytecode/ClassFile.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
```

jar/javassist/bytecode/analysis/Analyzer.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/scopedpool/SoftValueHashMap.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/compiler/ast/CastExpr.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/scopedpool/ScopedClassPoolFactoryImpl.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/ClassPool.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/compiler/CompileError.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/expr/Handler.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/convert/TransformCall.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/bytecode/stackmap/Tracer.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/compiler/JvstTypeChecker.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/bytecode/analysis/ControlFlow.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/compiler/TokenId.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/bytecode/MethodInfo.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/bytecode/LocalVariableTypeAttribute.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/util/proxy/SerializedProxy.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/convert/TransformBefore.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/Loader.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/compiler/SyntaxError.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/bytecode/stackmap/TypeData.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/bytecode/LocalVariableAttribute.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/bytecode/analysis/Util.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/convert/TransformAfter.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/compiler/ast/DoubleConst.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/tools/rmi/ObjectNotFoundException.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/ByteArrayClassPath.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/bytecode/ByteStream.java

- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/ast/Member.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/tools/reflect/Metaobject.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/Mnemonic.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/CodeAnalyzer.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/util/proxy/RuntimeSupport.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/expr/MethodCall.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/tools/Dump.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/ast/FieldDecl.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/analysis/Subroutine.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/tools/web/Viewer.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/CtClass.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/ByteArray.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/util/proxy/DefineClassHelper.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/util/proxy/ProxyObjectOutputStream.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/CtPrimitiveType.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/CtMethod.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/InnerClassesAttribute.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/util/proxy/ProxyObject.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/FieldInfo.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/CtField.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/ast/Declarator.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/ast/StringL.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/expr/NewArray.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/ast/Stmnt.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/convert/TransformAccessArrayField.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/SignatureAttribute.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/DuplicateMemberException.java
- \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-

jar/javassist/tools/rmi/RemoteException.java  
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jar/javassist/compiler/ast/Variable.java  
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\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
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\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/bytecode/DeprecatedAttribute.java  
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jar/javassist/util/proxy/SecurityActions.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/compiler/ast/Expr.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/LoaderClassPath.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/bytecode/stackmap/MapMaker.java  
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jar/javassist/compiler/MemberResolver.java  
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jar/javassist/bytecode/ExceptionsAttribute.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/Translator.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/bytecode/CodeIterator.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/util/proxy/ProxyFactory.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/CodeConverter.java  
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jar/javassist/bytecode/AnnotationsAttribute.java  
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jar/javassist/CtNewConstructor.java  
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jar/javassist/compiler/ast/Keyword.java  
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jar/javassist/bytecode/SyntheticAttribute.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/URLClassPath.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/bytecode/analysis/Executor.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/compiler/TypeChecker.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/compiler/ast/NewExpr.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/compiler/ast/InstanceOfExpr.java

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\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/scopedpool/ScopedClassPoolFactory.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/util/proxy/DefinePackageHelper.java  
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\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/CtArray.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/BadBytecode.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/ast/MethodDecl.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/StackMap.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/analysis/FramePrinter.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/tools/reflect/CannotReflectException.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/convert/TransformNew.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/CtBehavior.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/LineNumberAttribute.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/ast/Visitor.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/stackmap/BasicBlock.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/convert/TransformWriteField.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/CtNewWrappedConstructor.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/ClassClassPath.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/InstructionPrinter.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/CodeAttribute.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/stackmap/TypedBlock.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/annotation/NoSuchClassError.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-

jar/javassist/tools/rmi/AppletServer.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
 jar/javassist/SerialVersionUID.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
 jar/javassist/bytecode/stackmap/TypeTag.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
 jar/javassist/scopedpool/ScopedClassPoolRepositoryImpl.java  
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 jar/javassist/compiler/ast/ArrayInit.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
 jar/javassist/compiler/ast/CallExpr.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
 jar/javassist/bytecode/analysis/MultiType.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
 jar/javassist/bytecode/analysis/Type.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
 jar/javassist/convert/TransformReadField.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
 jar/javassist/compiler/AccessorMaker.java  
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 jar/javassist/tools/web/Webserver.java  
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 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/expr/FieldAccess.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/runtime/Desc.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/expr/ExprEditor.java  
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 jar/javassist/bytecode/LongVector.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/CtMember.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
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 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
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\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
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\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
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\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/compiler/ast/ASTree.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-  
jar/javassist/tools/reflect/CannotCreateException.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-



jar/javassist/util/proxy/MethodFilter.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/util/proxy/Proxy.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/ConstantAttribute.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/util/proxy/MethodHandler.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/ExceptionTable.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/tools/Callback.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/util/HotSwapper.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/Descriptor.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/StackMapTable.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/Opcodes.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/ClassMap.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/analysis/MultiArrayType.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/ast/BinExpr.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/tools/rmi/Proxy.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/CtClassType.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/CodeGen.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/tools/reflect/ClassMetaobject.java  
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 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/Javac.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/annotation/AnnotationsWriter.java  
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 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/AccessFlag.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/expr/ConstructorCall.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/ClassPath.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/tools/rmi/ObjectImporter.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/tools/reflect/Sample.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/NotFoundException.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/NoFieldException.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/convert/TransformFieldAccess.java

\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/SourceFileAttribute.java  
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\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/ast/CondExpr.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/tools/framedump.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/CtNewMethod.java  
\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/ClassFileWriter.java

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\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/annotation/DoubleMemberValue.java

\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/annotation/LongMemberValue.java

\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/annotation/EnumMemberValue.java

\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/annotation/MemberValue.java

\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/annotation/FloatMemberValue.java

\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/annotation/Annotation.java

\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/annotation/ShortMemberValue.java

\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/annotation/ArrayMemberValue.java

\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-

```
jar/javassist/bytecode/annotation/StringMemberValue.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/bytecode/annotation/CharMemberValue.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/bytecode/annotation/AnnotationMemberValue.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/bytecode/annotation/ByteMemberValue.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/bytecode/annotation/ClassMemberValue.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/bytecode/annotation/BooleanMemberValue.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/bytecode/annotation/IntegerMemberValue.java
```

## 1.176 jedis 3.3.0

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```
* /opt/ws_local/PERMITS_SQL/1047560748_1590497249.67/0/jedis-3-3-0-sources-
jar/redis/clients/jedis/util/RedisInputStream.java
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\* /opt/ws\_local/PERMITS\_SQL/1047560748\_1590497249.67/0/jedis-3-3-0-sources-jar/redis/clients/jedis/util/MurmurHash.java

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## 1.178 jackson-module-afterburner 2.10.5

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## 1.179 activation-api 1.2.2

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\* org.eclipse.jetty.orbit:javax.security.auth.message



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- \* org.eclipse.jetty.orbit:javafx.mail.glassfish

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Oracle

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<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

- \* javax.servlet:javax.servlet-api
- \* javax.annotation:javax.annotation-api
- \* javax.transaction:javax.transaction-api
- \* javax.websocket:javax.websocket-api

-----

Oracle OpenJDK

If ALPN is used to negotiate HTTP/2 connections, then the following artifacts may be included in the distribution or downloaded when ALPN module is selected.

- \* java.sun.security.ssl

These artifacts replace/modify OpenJDK classes. The modifications are hosted at github and both modified and original are under GPL v2 with classpath exceptions.

<http://openjdk.java.net/legal/gplv2+ce.html>

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OW2

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- org.ow2.asm:asm-commons
- org.ow2.asm:asm

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Apache

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org.apache.taglibs:taglibs-standard-impl

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org.mortbay.jasper:apache-jsp  
org.apache.tomcat:tomcat-jasper  
org.apache.tomcat:tomcat-juli  
org.apache.tomcat:tomcat-jsp-api  
org.apache.tomcat:tomcat-el-api  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-api  
org.apache.tomcat:tomcat-util-scan  
org.apache.tomcat:tomcat-util

org.mortbay.jasper:apache-el  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-el-api

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org.eclipse.jetty.toolchain:jetty-schemas

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Assorted

The UnixCrypt.java code implements the one way cryptography used by Unix systems for simple password protection. Copyright 1996 Aki Yoshida, modified April 2001 by Iris Van den Broeke, Daniel Deville.

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## 1.182 jackson-datatype-joda 2.15.0

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```
* /opt/cola/permits/1698848093_1685285744.9963214/0/netty-resolver-4-1-93-final-sources-
jar/io/netty/resolver/HostsFileEntriesProvider.java
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jar/io/netty/resolver/NoopAddressResolver.java  
\* /opt/cola/permits/1698848093\_1685285744.9963214/0/netty-resolver-4-1-93-final-sources-  
jar/io/netty/resolver/NoopAddressResolverGroup.java  
\* /opt/cola/permits/1698848093\_1685285744.9963214/0/netty-resolver-4-1-93-final-sources-  
jar/io/netty/resolver/AddressResolverGroup.java  
\* /opt/cola/permits/1698848093\_1685285744.9963214/0/netty-resolver-4-1-93-final-sources-  
jar/io/netty/resolver/NameResolver.java  
\* /opt/cola/permits/1698848093\_1685285744.9963214/0/netty-resolver-4-1-93-final-sources-  
jar/io/netty/resolver/package-info.java  
\* /opt/cola/permits/1698848093\_1685285744.9963214/0/netty-resolver-4-1-93-final-sources-  
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\* /opt/cola/permits/1698848093\_1685285744.9963214/0/netty-resolver-4-1-93-final-sources-jar/io/netty/resolver/DefaultAddressResolverGroup.java

\* /opt/cola/permits/1698848093\_1685285744.9963214/0/netty-resolver-4-1-93-final-sources-jar/io/netty/resolver/InetAddressResolver.java

\* /opt/cola/permits/1698848093\_1685285744.9963214/0/netty-resolver-4-1-93-final-sources-jar/io/netty/resolver/HostsFileEntriesResolver.java

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jar/io/netty/resolver/DefaultNameResolver.java  
\* /opt/cola/permits/1698848093\_1685285744.9963214/0/netty-resolver-4-1-93-final-sources-jar/io/netty/resolver/CompositeNameResolver.java  
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\* /opt/cola/permits/1698848093\_1685285744.9963214/0/netty-resolver-4-1-93-final-sources-jar/io/netty/resolver/ResolvedAddressTypes.java

## 1.184 jopt-simple 5.0.2

## 1.185 netty-codec-xml 4.1.93.Final

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Found in path(s):

- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/XmlDecoder.java
- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/XmlDocumentEnd.java
- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/XmlProcessingInstruction.java
- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/XmlNamespace.java
- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/XmlDocumentStart.java
- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/XmlElement.java
- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/XmlEntityReference.java
- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/XmlComment.java
- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/XmlCharacters.java
- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/XmlDTD.java
- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/XmlCdata.java
- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/XmlElementStart.java
- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/XmlSpace.java
- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/package-info.java
- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/XmlAttribute.java
- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/XmlElementEnd.java
- \* /opt/cola/permits/1698847989\_1685285749.8351583/0/netty-codec-xml-4-1-93-final-sources-jar/io/netty/handler/codec/xml/XmlContent.java

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# 1.186 joda-time 2.10.8

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# 1.187 jetty-servlets 9.4.51.v20230217

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The following artifacts are EPL.

\* org.eclipse.jetty.orbit:org.eclipse.jdt.core

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\* org.eclipse.jetty.orbit:javax.security.auth.message

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- \* org.eclipse.jetty.orbit:javafx.mail.glassfish

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Oracle

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<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

- \* javax.servlet:javax.servlet-api
- \* javax.annotation:javax.annotation-api
- \* javax.transaction:javax.transaction-api
- \* javax.websocket:javax.websocket-api

-----

Oracle OpenJDK

If ALPN is used to negotiate HTTP/2 connections, then the following artifacts may be included in the distribution or downloaded when ALPN module is selected.

- \* java.sun.security.ssl

These artifacts replace/modify OpenJDK classes. The modifications are hosted at github and both modified and original are under GPL v2 with classpath exceptions.

<http://openjdk.java.net/legal/gplv2+ce.html>

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The following artifacts are licensed by the OW2 Foundation according to the terms of <http://asm.ow2.org/license.html>

- org.ow2.asm:asm-commons
- org.ow2.asm:asm

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Apache

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- org.apache.taglibs:taglibs-standard-spec

org.apache.taglibs:taglibs-standard-impl

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MortBay

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org.mortbay.jasper:apache-jsp  
org.apache.tomcat:tomcat-jasper  
org.apache.tomcat:tomcat-juli  
org.apache.tomcat:tomcat-jsp-api  
org.apache.tomcat:tomcat-el-api  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-api  
org.apache.tomcat:tomcat-util-scan  
org.apache.tomcat:tomcat-util

org.mortbay.jasper:apache-el  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-el-api

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org.eclipse.jetty.toolchain:jetty-schemas

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Assorted

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include/GL/glxext.h
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## Little Color Management System (LCMS) v2.12

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## Bert Belder: wepoll v 1.5.8

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...

wepoll - epoll for Windows  
<https://github.com/piscisaureus/wepoll>

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## 1.190 dropwizard-auth-ldap 1.0.4

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\* /opt/cola/permits/1309839528\_1650278640.46/0/dropwizard-auth-ldap-1-0-4-sources-1-jar/META-INF/maven/com.yammer.dropwizard/dropwizard-auth-ldap/pom.xml

## 1.191 jul-to-slf4j 1.7.32

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\*/opt/cola/permits/1182802247\_1629961496.53/0/jul-to-slf4j-1-7-32-sources-  
jar/org/slf4j/bridge/SLF4JBridgeHandler.java

## 1.192 jest-common 0.1.1

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\* /opt/cola/permits/1636752241\_1681746198.4137597/0/jest-common-0-1-1-sources-1-jar/io/searchbox/client/util/PaddedAtomicInteger.java

# 1.193 netty-handler 4.1.93.Final

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\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/BouncyCastlePemReader.java

\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/OpenSslCertificateCompressionAlgorithm.java

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\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/traffic/GlobalTrafficShapingHandler.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/traffic/TrafficCounter.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/traffic/package-info.java

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\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/SslHandshakeCompletionEvent.java

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- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/ClientAuth.java
- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/OpenSslSessionTicketKey.java
- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/SslContextBuilder.java
- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/ApplicationProtocolNegotiationHandler.java
- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/util/LazyJavaxX509Certificate.java
- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/ApplicationProtocolNames.java
- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/ApplicationProtocolAccessor.java

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\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/AbstractSniHandler.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/Conscrypt.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/SniCompletionEvent.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/ConscryptAlpnSslEngine.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/ocsp/OcspClientHandler.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/OptionalSslHandler.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/JdkAlpnSslUtils.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/ocsp/package-info.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/SslCloseCompletionEvent.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/SslClientHelloHandler.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/JdkAlpnSslEngine.java

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*/opt/cola/permits/1698848164_1685285720.1511803/0/netty-handler-4-1-93-final-sources-
jar/io/netty/handler/ssl/util/SelfSignedCertificate.java
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jar/io/netty/handler/timeout/TimeoutException.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-  
jar/io/netty/handler/stream/ChunkedNioFile.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-  
jar/io/netty/handler/timeout/IdleStateEvent.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-  
jar/io/netty/handler/logging/package-info.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-  
jar/io/netty/handler/stream/ChunkedFile.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-  
jar/io/netty/handler/ssl/SslHandler.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-  
jar/io/netty/handler/stream/ChunkedWriteHandler.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-  
jar/io/netty/handler/stream/ChunkedNioStream.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-  
jar/io/netty/handler/timeout/IdleState.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-  
jar/io/netty/handler/ssl/package-info.java

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\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/timeout/ReadTimeoutHandler.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/timeout/WriteTimeoutException.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/timeout/package-info.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/stream/ChunkedStream.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/stream/ChunkedInput.java  
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\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/timeout/IdleStateHandler.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/timeout/ReadTimeoutException.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/stream/package-info.java

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* /opt/cola/permits/1698848164_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/address/ResolveAddressHandler.java
* /opt/cola/permits/1698848164_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/SslClosedEngineException.java
* /opt/cola/permits/1698848164_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/SslHandshakeTimeoutException.java
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\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/util/FingerprintTrustManagerFactoryBuilder.java  
\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ipfilter/IpSubnetFilter.java  
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\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/OpenSslEngineMap.java

\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/OpenSslServerContext.java

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\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/OpenSslApplicationProtocolNegotiator.java

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\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/util/X509KeyManagerWrapper.java

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\* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/pcap/TCPpacket.java  
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- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/PemX509Certificate.java
- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/ReferenceCountedOpenSslContext.java
- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/util/X509TrustManagerWrapper.java
- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/PemValue.java
- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/ReferenceCountedOpenSslEngine.java
- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/flush/FlushConsolidationHandler.java
- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/ReferenceCountedOpenSslClientContext.java
- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/flush/package-info.java
- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/Java8SslUtils.java
- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/ReferenceCountedOpenSslServerContext.java
- \* /opt/cola/permits/1698848164\_1685285720.1511803/0/netty-handler-4-1-93-final-sources-jar/io/netty/handler/ssl/PemEncoded.java

## 1.194 juel-api 2.2.7

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```
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/CompositeELResolver.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/ELResolver.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/MethodInfo.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-
jar/javax/el/PropertyNotFoundException.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/ListELResolver.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/FunctionMapper.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/ArrayELResolver.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/ValueExpression.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-
jar/javax/el/MethodNotFoundException.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/ELContextListener.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-
jar/javax/el/ResourceBundleELResolver.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/Expression.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/ELContext.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/BeanELResolver.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/ValueReference.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/ELException.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/ExpressionFactory.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/MapELResolver.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/MethodExpression.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/VariableMapper.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-jar/javax/el/ELContextEvent.java
* /opt/cola/permits/1128408631_1611918005.99/0/juel-api-2-2-7-sources-1-
jar/javax/el/PropertyNotWritableException.java
```



# 1.195 protobuf 3.19.4

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- \* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/AbstractSocksMessage.java
- \* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/package-info.java
- \* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5PasswordAuthRequestDecoder.java
- \* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5PasswordAuthResponseDecoder.java
- \* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v4/AbstractSocks4Message.java
- \* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v4/Socks4Message.java
- \* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5CommandResponseDecoder.java
- \* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v5/AbstractSocks5Message.java
- \* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v4/package-info.java
- \* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5InitialRequestDecoder.java
- \* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5ServerEncoder.java
- \* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v4/Socks4ServerEncoder.java
- \* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5ClientEncoder.java
- \* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5Message.java
- \* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5CommandRequestDecoder.java
- \* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v4/Socks4ClientEncoder.java

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\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-  
jar/io/netty/handler/codec/socksx/SocksPortUnificationServerHandler.java  
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jar/io/netty/handler/codec/socksx/v4/Socks4CommandResponse.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-  
jar/io/netty/handler/codec/socksx/v5/Socks5InitialRequest.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-  
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\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-  
jar/io/netty/handler/codec/socks/SocksAuthRequest.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-

jar/io/netty/handler/codec/socksx/v5/Socks5PasswordAuthRequest.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-  
jar/io/netty/handler/codec/socks/SocksCmdResponseDecoder.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-  
jar/io/netty/handler/codec/socksx/v4/DefaultSocks4CommandResponse.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-  
jar/io/netty/handler/codec/socksx/v5/DefaultSocks5InitialRequest.java  
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jar/io/netty/handler/codec/socksx/v4/DefaultSocks4CommandRequest.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-  
jar/io/netty/handler/codec/socks/UnknownSocksResponse.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-  
jar/io/netty/handler/codec/socks/SocksCmdResponse.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-  
jar/io/netty/handler/codec/socks/SocksAuthRequestDecoder.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-  
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jar/io/netty/handler/codec/socks/SocksInitResponse.java  
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jar/io/netty/handler/codec/socks/SocksMessage.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-  
jar/io/netty/handler/codec/socksx/v4/Socks4CommandStatus.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-  
jar/io/netty/handler/codec/socks/SocksCommonUtils.java  
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jar/io/netty/handler/codec/socks/SocksMessageEncoder.java  
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jar/io/netty/handler/codec/socksx/SocksMessage.java  
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jar/io/netty/handler/codec/socksx/v5/DefaultSocks5InitialResponse.java  
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jar/io/netty/handler/codec/socksx/v4/Socks4CommandType.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socks/SocksInitResponseDecoder.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socks/SocksCmdRequestDecoder.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socks/SocksResponse.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socks/UnknownSocksRequest.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socks/SocksAuthResponseDecoder.java  
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\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v4/Socks4ServerDecoder.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socks/SocksInitRequestDecoder.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socks/package-info.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v4/Socks4CommandRequest.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5InitialResponse.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v5/package-info.java  
\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-jar/io/netty/handler/codec/socksx/v5/DefaultSocks5CommandResponse.java  
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jar/io/netty/handler/codec/socks/SocksAuthStatus.java
* /opt/cola/permits/1698848058_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-
jar/io/netty/handler/codec/socks/SocksProtocolVersion.java
* /opt/cola/permits/1698848058_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-
jar/io/netty/handler/codec/socksx/v5/Socks5AuthMethod.java
* /opt/cola/permits/1698848058_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-
jar/io/netty/handler/codec/socksx/v5/Socks5AddressType.java
* /opt/cola/permits/1698848058_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-
jar/io/netty/handler/codec/socksx/v5/Socks5PasswordAuthStatus.java
* /opt/cola/permits/1698848058_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-
jar/io/netty/handler/codec/socks/SocksRequestType.java
* /opt/cola/permits/1698848058_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-
jar/io/netty/handler/codec/socks/SocksAddressType.java
* /opt/cola/permits/1698848058_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-
jar/io/netty/handler/codec/socks/SocksSubnegotiationVersion.java
* /opt/cola/permits/1698848058_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-
jar/io/netty/handler/codec/socksx/SocksVersion.java
* /opt/cola/permits/1698848058_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-
jar/io/netty/handler/codec/socks/SocksResponseType.java
* /opt/cola/permits/1698848058_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-
jar/io/netty/handler/codec/socksx/v5/Socks5CommandStatus.java
* /opt/cola/permits/1698848058_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-
jar/io/netty/handler/codec/socksx/v5/Socks5CommandType.java
* /opt/cola/permits/1698848058_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-
jar/io/netty/handler/codec/socks/SocksCmdStatus.java
* /opt/cola/permits/1698848058_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-
jar/io/netty/handler/codec/socks/SocksAuthScheme.java
* /opt/cola/permits/1698848058_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-
```

jar/io/netty/handler/codec/socks/SocksCmdType.java

\* /opt/cola/permits/1698848058\_1685285759.199273/0/netty-codec-socks-4-1-93-final-sources-

jar/io/netty/handler/codec/socks/SocksMessageType.java

# 1.197 javax-inject 1

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MySQL Connector/J 8.0

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## 1.199 commons-pool 2.6.2



# 1.200 big-math 2.0.0

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# 1.201 guice-multibindings 4.2.3

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## 1.202 kotlin 1.3.70

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{"version":3,"file":"kotlin.js","sources":["wrapper.js","arrayUtils.js","callableReferenceUtils.js","conversions.js","core.js","long.js","markerFunctions.js","misc.js","polyfills.js","rtti.js","arrayUtils.kt","runtime/Enum.kt","primitiveCompanionObjects.kt","generated/_Arrays.kt","generated/_Ranges.kt","kotlin/UByte.kt","kotlin/UInt.kt","kotlin/UShort.kt","Ranges.kt","collections/Collections.kt","collections/Maps.kt","collections/Sets.kt","text/StringNumberConversions.kt","kotlin/UnsignedUtils.kt","collections/Iterables.kt","collections/Sequences.kt","util/Preconditions.kt","ge
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nerated/\_ArraysJs.kt","comparisons/Comparisons.kt","kotlin/Comparator.kt","util/Standard.kt","generated/\_ComparisonsJs.kt","generated/\_Collections.kt","kotlin/collections.kt","collections/Iterators.kt","generated/\_Comparisons.kt","generated/\_Maps.kt","generated/\_Sequences.kt","generated/\_Sets.kt","generated/\_Strings.kt","text/Strings.kt","kotlin/text/string.kt","kotlin/UByteArray.kt","kotlin/UIntArray.kt","kotlin/ULongArray.kt","kotlin/ULong.kt","kotlin/UShortArray.kt","generated/\_UArrays.kt","generated/\_UCollections.kt","generated/\_UComparisons.kt","generated/\_URanges.kt","generated/\_USequences.kt","Collections.kt","Iterators.kt","ProgressionIterators.kt","Progressions.kt","Range.kt","Unit.kt","annotation/Annotations.kt","internal/InternalAnnotations.kt","internal/progressionUtil.kt","reflect/KParameter.kt","reflect/KType.kt","reflect/KVariance.kt","reflect/KVisibility.kt","kotlin/builtins.kt","kotlin/jsTypeOf.kt","kotlin/kotlin.kt","kotlin/coroutines/CoroutineImpl.kt","util/Result.kt","coroutines/Continuation.kt","kotlin/coroutines/intrinsics/IntrinsicsJs.kt","kotlin/currentBeMisc.kt","kotlin/jsOperators.kt","kotlin/math\_js-v1.kt","kotlin/numbers\_js-v1.kt","kotlin/text/numberConversions\_js-v1.kt","generated/\_CollectionsJs.kt","generated/\_StringsJs.kt","generated/\_UArraysJs.kt","jquery/ui.kt","kotlin/annotations.kt","kotlin/annotationsJVM.kt","kotlin/collections/AbstractMutableCollection.kt","kotlin/collections/AbstractMutableList.kt","kotlin/collections/AbstractMutableMap.kt","kotlin/collections/AbstractMutableSet.kt","kotlin/collections/ArrayList.kt","kotlin/collections/ArraySorting.kt","kotlin/collections/ArraysJs.kt","kotlin/collections/EqualityComparator.kt","kotlin/collections/HashMap.kt","kotlin/collections/HashSet.kt","kotlin/collections/InternalHashMap.kt","kotlin/collections/InternalMap.kt","kotlin/collections/InternalStringMap.kt","kotlin/collections/LinkedHashMap.kt","kotlin/collections/LinkedHashSet.kt","kotlin/concurrent.kt","kotlin/console.kt","kotlin/coroutines/SafeContinuationJs.kt","kotlin/coroutines/js/internal/EmptyContinuation.kt","kotlin/date.kt","kotlin/dom/Builders.kt","kotlin/dom/Classes.kt","text/regex/RegexExtensions.kt","text/StringBuilder.kt","kotlin/dom/Dom.kt","kotlin/dom/EventListener.kt","kotlin/dom/ItemArrayLike.kt","kotlin/dom/Mutations.kt","kotlin/dynamic.kt","kotlin/exceptionUtils.kt","kotlin/exceptions.kt","kotlin/grouping.kt","collections/Grouping.kt","kotlin/js.math.kt","kotlin/json.kt","kotlin/math.kt","kotlin/numbers.kt","kotlin/promise.kt","kotlin/random/PlatformRandom.kt","kotlin/reflect/JsClass.kt","kotlin/reflect/KClassImpl.kt","kotlin/reflect/KTypeHelpers.kt","kotlin/reflect/KTypeImpl.kt","kotlin/reflect/KTypeParameterImpl.kt","kotlin/reflect/primitives.kt","kotlin/reflect/reflection.kt","kotlin/regexp.kt","kotlin/sequence.kt","kotlin/text/CharacterCodingExceptionJs.kt","kotlin/text/StringBuilderJs.kt","kotlin/text/char.kt","kotlin/text/numberConversions.kt","kotlin/text/regex.kt","kotlin/text/stringsCode.kt","kotlin/text/utf8Encoding.kt","kotlin/time/DurationUnit.kt","kotlin/time/MonoTimeSource.kt","kotlin/time/formatToDecimals.kt","org.w3c/deprecated.kt","org.w3c/org.khronos.webgl.kt","org.w3c/org.w3c.dom.clipboard.kt","org.w3c/org.w3c.dom.css.kt","org.w3c/org.w3c.dom.events.kt","org.w3c/org.w3c.dom.kt","org.w3c/org.w3c.fetch.kt","org.w3c/org.w3c.dom.mediacapture.kt","org.w3c/org.w3c.dom.pointerevents.kt","org.w3c/org.w3c.dom.svg.kt","org.w3c/org.w3c.files.kt","org.w3c/org.w3c.notifications.kt","org.w3c/org.w3c.workers.kt","org.w3c/org.w3c.xhr.kt","annotations/Experimental.kt","annotations/ExperimentalStdlibApi.kt","annotations/Inference.kt","annotations/Multiplatform.kt","annotations/OptIn.kt","collections/AbstractCollection.kt","collections/AbstractIterator.kt","collections/AbstractList.kt","collections/AbstractMap.kt","collections/AbstractSet.kt","collections/ArrayDeque.kt","collections/Arrays.kt","collections/IndexedValue.kt","collections/MapAccessors.kt","collections/MapWithDefault.kt","collections/MutableCollections.kt","collections/ReversedViews.kt","collections/SequenceBuilder.kt","collections/SlidingWindow.kt","collections/UArraySorting.kt","contracts/ContractBuilder.kt","coroutines/ContinuationInterceptor.kt","coroutines/CoroutineContext.kt","coroutines/CoroutineContextImpl.kt","coroutines/intrinsics/Intrinsics.kt","experimental/bitwiseOperations.kt","experimental/inferenceMarker.kt","internal/Annotations.kt","properties/Delegates.kt","properties/ObservableProperty.kt","random/Random.kt","random/URandom.kt","random/XorWowRandom.kt","ranges/Ranges.kt","reflect/KClasses.kt","reflect/typeOf.kt","text/Appendable.kt","text/Char.kt","text/Indent.kt","text/Typography.kt","text/regex/MatchResult.kt","time/Duration.kt","time/DurationUnit.kt","time/ExperimentalTime.kt","time/TimeSource.kt","time/TimeSources.kt","time/measureTime.kt","util/HashCode.kt","util/KotlinVersion.kt","util/Lateinit.kt","util/Lazy.kt","util/Numbers.kt","util/Suspend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(root, factory) {\n  if (typeof define === 'function' && define.amd) {\n    define('kotlin', ['exports'], factory);\n  }\n  else if (typeof exports === 'object') {\n    factory(module.exports);\n  }\n  else {\n    root.kotlin = {};\n    factory(root.kotlin);\n  }\n}(this, function (Kotlin) {\n  var _ = Kotlin;\n\n  insertContent();\n});\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors. \n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n *\n\nKotlin.isArray = function (a) {\n  return (Array.isArray(a) || a instanceof Int8Array) && a.$type$ === \"BooleanArray\";\n}\n\nKotlin.isByteArray = function (a) {\n  return a instanceof Int8Array && a.$type$ !== \"BooleanArray\";\n}\n\nKotlin.isShortArray = function (a) {\n  return a instanceof Int16Array;\n}\n\nKotlin.isCharArray = function (a) {\n  return a instanceof Uint16Array && a.$type$ === \"CharArray\";\n}\n\nKotlin.isIntArray = function (a) {\n  return a instanceof Int32Array;\n}\n\nKotlin.isFloatArray = function (a) {\n  return a instanceof Float32Array;\n}\n\nKotlin.isDoubleArray = function (a) {\n  return a instanceof Float64Array;\n}\n\nKotlin.isLongArray = function (a) {\n  return Array.isArray(a) && a.$type$ === \"LongArray\";\n}\n\nKotlin.isArray = function (a) {\n  return Array.isArray(a) && !a.$type$;\n}\n\nKotlin.isArrayish = function (a) {\n  return Array.isArray(a) || ArrayBuffer.isView(a);\n}\n\nKotlin.arrayToString = function (a) {\n  var toString = Kotlin.isCharArray(a) ? String.fromCharCode : Kotlin.toString;\n  return \"[\" + Array.prototype.map.call(a, function(e) { return toString(e); }).join(\", \") + \"]\";\n}\n\nKotlin.arrayDeepToString = function (arr) {\n  return Kotlin.kotlin.collections.contentDeepToStringImpl(arr);\n}\n\nKotlin.arrayEquals = function (a, b) {\n  if (a === b) {\n    return true;\n  }\n  if (!Kotlin.isArrayish(b) || a.length !== b.length) {\n    return false;\n  }\n  for (var i = 0, n = a.length; i < n; i++) {\n    if (!Kotlin.equals(a[i], b[i])) {\n      return false;\n    }\n  }\n  return true;\n}\n\nKotlin.arrayDeepEquals = function (a, b) {\n  return Kotlin.kotlin.collections.contentDeepEqualsImpl(a, b);\n}\n\nKotlin.arrayHashCode = function (arr) {\n  var result = 1;\n  for (var i = 0, n = arr.length; i < n; i++) {\n    result = ((31 * result | 0) + Kotlin.hashCode(arr[i])) | 0;\n  }\n  return result;\n}\n\nKotlin.arrayDeepHashCode = function (arr) {\n  return Kotlin.kotlin.collections.contentDeepHashCodeImpl(arr);\n}\n\nKotlin.primitiveArraySort = function (array) {\n  array.sort(Kotlin.doubleCompareTo);\n}\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors. \n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n *\n\nKotlin.getCallableRef = function(name, f) {\n  f.callableName = name;\n  return f;\n}\n\nKotlin.getPropertyCallableRef = function(name, paramCount, getter, setter) {\n  getter.get = getter;\n  getter.set = setter;\n  getter.callableName = name;\n  return getPropertyRefClass(getter, setter, propertyRefClassMetadataCache[paramCount]);\n}\n\nfunction getPropertyRefClass(obj, setter, cache) {\n  obj.$metadata$ = getPropertyRefMetadata(typeof setter === \"function\" ? cache.mutable : cache.immutable);\n  obj.constructor = obj;\n  return obj;\n}\n\nvar propertyRefClassMetadataCache = [\n  {\n    mutable: {\n      value: null, implementedInterface: function () {\n        return Kotlin.kotlin.reflect.KMutableProperty0\n      }\n    },\n    immutable: {\n      value: null, implementedInterface: function () {\n        return Kotlin.kotlin.reflect.KProperty0\n      }\n    }\n  },\n  {\n    mutable: {\n      value: null, implementedInterface: function () {\n        return Kotlin.kotlin.reflect.KMutableProperty1\n      }\n    },\n    immutable: {\n      value: null, implementedInterface: function () {\n        return Kotlin.kotlin.reflect.KProperty1\n      }\n    }\n  }\n];\n\nfunction getPropertyRefMetadata(cache) {\n  if (cache.value === null) {\n    cache.value = {\n      interfaces: [cache.implementedInterface()],\n      baseClass: null,\n      functions: {},\n      properties: {},\n      types: {},\n      staticMembers: {}\n    }\n  }\n  return cache.value;\n}\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors. \n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n *\n\nKotlin.toShort = function (a) {\n  return (a & 0xFFFF) << 16 >> 16;\n}\n\nKotlin.toByte = function (a) {\n  return (a & 0xFF) << 24 >> 24;\n}\n\nKotlin.toChar = function (a) {\n  return a & 0xFFFF;\n}\n\nKotlin.numberToLong = function (a) {\n  return a instanceof Kotlin.Long ? a : Kotlin.Long.fromNumber(a);\n}\n\nKotlin.numberToInt = function (a) {\n  return a instanceof Kotlin.Long ? a.toInt() : Kotlin.doubleToInt(a);\n}\n\nKotlin.numberToShort = function (a) {\n  return

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Kotlin.toShort(Kotlin.numberToInt(a));\n};\n\nKotlin.numberToByte = function (a) {\n  return
Kotlin.toByte(Kotlin.numberToInt(a));\n};\n\nKotlin.numberToDouble = function (a) {\n  return
+a;\n};\n\nKotlin.numberToChar = function (a) {\n  return
Kotlin.toChar(Kotlin.numberToInt(a));\n};\n\nKotlin.doubleToInt = function(a) {\n  if (a > 2147483647) return
2147483647;\n  if (a < -2147483648) return -2147483648;\n  return a | 0;\n};\n\nKotlin.toBoxedChar = function
(a) {\n  if (a == null) return a;\n  if (a instanceof Kotlin.BoxedChar) return a;\n  return new
Kotlin.BoxedChar(a);\n};\n\nKotlin.unboxChar = function(a) {\n  if (a == null) return a;\n  return
Kotlin.toChar(a);\n};\n"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language
contributors. \n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\nKotlin.equals = function (obj1, obj2) {\n  if (obj1 == null) {\n    return obj2 ==
null;\n  }\n  if (obj2 == null) {\n    return false;\n  }\n  if (obj1 !== obj2) {\n    return obj2 !== obj2;\n
}\n  if (typeof obj1 === "object" && typeof obj1.equals === "function") {\n    return obj1.equals(obj2);\n
}\n  if (typeof obj1 === "number" && typeof obj2 === "number") {\n    return obj1 === obj2 && (obj1 !==
0 || 1 / obj1 === 1 / obj2);\n  }\n  return obj1 === obj2;\n};\n\nKotlin.hashCode = function (obj) {\n  if (obj ==
null) {\n    return 0;\n  }\n  var objType = typeof obj;\n  if ("object" === objType) {\n    return "function"
=== typeof obj.hashCode ? obj.hashCode() : getObjectHashCode(obj);\n  }\n  if ("function" === objType) {\n
return getObjectHashCode(obj);\n  }\n  if ("number" === objType) {\n    return
Kotlin.numberHashCode(obj);\n  }\n  if ("boolean" === objType) {\n    return Number(obj)\n  }\n  var str
= String(obj);\n  return getStringHashCode(str);\n};\n\nKotlin.toString = function (o) {\n  if (o == null) {\n
return "null";\n  }\n  else if (Kotlin.isArrayish(o)) {\n    return "[...]";\n  }\n  else {\n    return
o.toString();\n  }\n};\n\n/** @const *\nvar POW_2_32 = 4294967296;\n// TODO: consider switching to Symbol
type once we are on ES6.\n/** @const *\nvar OBJECT_HASH_CODE_PROPERTY_NAME =
"KotlinHashCodeValue$";\n\nfunction getObjectHashCode(obj) {\n  if
(! (OBJECT_HASH_CODE_PROPERTY_NAME in obj)) {\n    var hash = (Math.random() * POW_2_32) | 0; //
Make 32-bit signed integer.\n    Object.defineProperty(obj, OBJECT_HASH_CODE_PROPERTY_NAME, {\n
value: hash, enumerable: false });\n  }\n  return
obj[OBJECT_HASH_CODE_PROPERTY_NAME];\n}\n\nfunction getStringHashCode(str) {\n  var hash = 0;\n
for (var i = 0; i < str.length; i++) {\n    var code = str.charCodeAt(i);\n    hash = (hash * 31 + code) | 0; // Keep
it 32-bit.\n  }\n  return hash;\n}\n\nKotlin.identityHashCode = getObjectHashCode;\n"/*\n * Copyright 2010-
2018 JetBrains s.r.o. and Kotlin Programming Language contributors. \n * Use of this source code is governed by
the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\n// Copyright 2009 The Closure
Library Authors. All Rights Reserved.\n// Licensed under the Apache License, Version 2.0 (the "License");\n//
you may not use this file except in compliance with the License.\n// You may obtain a copy of the License at\n//
http://www.apache.org/licenses/LICENSE-2.0\n// Unless required by applicable law or agreed to in writing,
software\n// distributed under the License is distributed on an "AS-IS" BASIS,\n// WITHOUT WARRANTIES OR
CONDITIONS OF ANY KIND, either express or implied.\n\n/**\n * Constructs a 64-bit two's-complement integer,
given its low and high 32-bit\n * values as *signed* integers. See the from* functions below for more\n *
convenient ways of constructing Longs.\n * \n * The internal representation of a long is the two given signed, 32-bit
values.\n * \n * We use 32-bit pieces because these are the size of integers on which\n * Javascript performs bit-
operations. For operations like addition and\n * multiplication, we split each number into 16-bit pieces, which can
easily be\n * multiplied within Javascript's floating-point representation without overflow\n * or change in sign.\n
*\n * \n * In the algorithms below, we frequently reduce the negative case to the\n * positive case by negating the
input(s) and then post-processing the result.\n * \n * Note that we must ALWAYS check specially whether those values
are MIN_VALUE\n * (-2^63) because -MIN_VALUE == MIN_VALUE (since 2^63 cannot be represented as\n * a
positive number, it overflows back into a negative). Not handling this\n * case would often result in infinite
recursion.\n * \n * @param {number} low The low (signed) 32 bits of the long.\n * @param {number} high The
high (signed) 32 bits of the long.\n * @constructor\n * @final\n */\n\nKotlin.Long = function(low, high) {\n  /**\n
 * @type {number}\n * @private\n */\n  this.low_ = low | 0; // force into 32 signed bits.\n\n  /**\n
 * @type

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{number}\n * @private\n * ^\n this.high_ = high | 0; // force into 32 signed bits.\n};\n\nKotlin.Long.$metadata$ =
{\n kind: \"class\", \n simpleName: \"Long\", \n interfaces: []\n};\n\n// NOTE: Common constant values
ZERO, ONE, NEG_ONE, etc. are defined below the\n// from* methods on which they depend.\n\n/**\n * A cache
of the Long representations of small integer values.\n * @type {!Object}\n * @private\n * ^\nKotlin.Long.IntCache_
= {};\n\n/**\n * Returns a Long representing the given (32-bit) integer value.\n * @param {number} value The
32-bit integer in question.\n * @return {!Kotlin.Long} The corresponding Long value.\n * ^\nKotlin.Long.fromInt =
function(value) {\n if (-128 <= value && value < 128) {\n var cachedObj = Kotlin.Long.IntCache_[value];\n if
(cachedObj) {\n return cachedObj;\n } }\n\n var obj = new Kotlin.Long(value | 0, value < 0 ? -1 : 0);\n if (-
128 <= value && value < 128) {\n Kotlin.Long.IntCache_[value] = obj;\n }\n return obj;\n};\n\n/**\n *
Converts this number value to `Long`.\n * The fractional part, if any, is rounded down towards zero.\n * Returns
zero if this `Double` value is `NaN`, `Long.MIN_VALUE` if it's less than `Long.MIN_VALUE`,\n *
`Long.MAX_VALUE` if it's bigger than `Long.MAX_VALUE`.\n * @param {number} value The number in
question.\n * @return {!Kotlin.Long} The corresponding Long value.\n * ^\nKotlin.Long.fromNumber =
function(value) {\n if (isNaN(value)) {\n return Kotlin.Long.ZERO;\n } else if (value <= -
Kotlin.Long.TWO_PWR_63_DBL_) {\n return Kotlin.Long.MIN_VALUE;\n } else if (value + 1 >=
Kotlin.Long.TWO_PWR_63_DBL_) {\n return Kotlin.Long.MAX_VALUE;\n } else if (value < 0) {\n return
Kotlin.Long.fromNumber(-value).negate();\n } else {\n return new Kotlin.Long(\n (value %
Kotlin.Long.TWO_PWR_32_DBL_) | 0,\n (value / Kotlin.Long.TWO_PWR_32_DBL_) | 0);\n
})\n};\n\n/**\n * Returns a Long representing the 64-bit integer that comes by concatenating\n * the given high and
low bits. Each is assumed to use 32 bits.\n * @param {number} lowBits The low 32-bits.\n * @param {number}
highBits The high 32-bits.\n * @return {!Kotlin.Long} The corresponding Long value.\n * ^\nKotlin.Long.fromBits
= function(lowBits, highBits) {\n return new Kotlin.Long(lowBits, highBits);\n};\n\n/**\n * Returns a Long
representation of the given string, written using the given\n * radix.\n * @param {string} str The textual
representation of the Long.\n * @param {number=} opt_radix The radix in which the text is written.\n * @return
{!Kotlin.Long} The corresponding Long value.\n * ^\nKotlin.Long.fromString = function(str, opt_radix) {\n if
(str.length == 0) {\n throw Error('number format error: empty string');\n }\n\n var radix = opt_radix || 10;\n if
(radix < 2 || 36 < radix) {\n throw Error('radix out of range: ' + radix);\n }\n\n if (str.charAt(0) == '-') {\n return
Kotlin.Long.fromString(str.substring(1), radix).negate();\n } else if (str.indexOf('-') >= 0) {\n throw Error('number
format error: interior \"-\" character: ' + str);\n }\n\n // Do several (8) digits each time through the loop, so as to\n //
minimize the calls to the very expensive emulated div.\n var radixToPower =
Kotlin.Long.fromNumber(Math.pow(radix, 8));\n\n var result = Kotlin.Long.ZERO;\n for (var i = 0; i < str.length;
i += 8) {\n var size = Math.min(8, str.length - i);\n var value = parseInt(str.substring(i, i + size), radix);\n if
(size < 8) {\n var power = Kotlin.Long.fromNumber(Math.pow(radix, size));\n result =
result.multiply(power).add(Kotlin.Long.fromNumber(value));\n } else {\n result =
result.multiply(radixToPower);\n result = result.add(Kotlin.Long.fromNumber(value));\n }\n }\n return
result;\n};\n\n// NOTE: the compiler should inline these constant values below and then remove\n// these
variables, so there should be no runtime penalty for these.\n\n/**\n * Number used repeated below in calculations.
This must appear before the\n * first call to any from* function below.\n * @type {number}\n * @private\n
* ^\nKotlin.Long.TWO_PWR_16_DBL_ = 1 << 16;\n\n/**\n * @type {number}\n * @private\n
* ^\nKotlin.Long.TWO_PWR_24_DBL_ = 1 << 24;\n\n/**\n * @type {number}\n * @private\n
* ^\nKotlin.Long.TWO_PWR_32_DBL_ =\n Kotlin.Long.TWO_PWR_16_DBL_ *
Kotlin.Long.TWO_PWR_16_DBL_;\n\n/**\n * @type {number}\n * @private\n
* ^\nKotlin.Long.TWO_PWR_31_DBL_ =\n Kotlin.Long.TWO_PWR_32_DBL_ / 2;\n\n/**\n * @type
{number}\n * @private\n * ^\nKotlin.Long.TWO_PWR_48_DBL_ =\n Kotlin.Long.TWO_PWR_32_DBL_ *
Kotlin.Long.TWO_PWR_16_DBL_;\n\n/**\n * @type {number}\n * @private\n
* ^\nKotlin.Long.TWO_PWR_64_DBL_ =\n Kotlin.Long.TWO_PWR_32_DBL_ *
Kotlin.Long.TWO_PWR_32_DBL_;\n\n/**\n * @type {number}\n * @private\n
* ^\nKotlin.Long.TWO_PWR_63_DBL_ =\n Kotlin.Long.TWO_PWR_64_DBL_ / 2;\n\n/** @type

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{!Kotlin.Long} *^\\nKotlin.Long.ZERO = Kotlin.Long.fromInt(0);\\n\\n/** @type {!Kotlin.Long}
*^\\nKotlin.Long.ONE = Kotlin.Long.fromInt(1);\\n\\n/** @type {!Kotlin.Long} *^\\nKotlin.Long.NEG_ONE =
Kotlin.Long.fromInt(-1);\\n\\n/** @type {!Kotlin.Long} *^\\nKotlin.Long.MAX_VALUE = \\n
Kotlin.Long.fromBits(0xFFFFFFFF | 0, 0x7FFFFFFF | 0);\\n\\n/** @type {!Kotlin.Long}
*^\\nKotlin.Long.MIN_VALUE = Kotlin.Long.fromBits(0, 0x80000000 | 0);\\n\\n/**\\n * @type {!Kotlin.Long}\\n *
@private\\n *^\\nKotlin.Long.TWO_PWR_24_ = Kotlin.Long.fromInt(1 << 24);\\n\\n/** @return {number} The
value, assuming it is a 32-bit integer. *^\\nKotlin.Long.prototype.toInt = function() {\\n return this.low_;\\n};\\n\\n/**
@return {number} The closest floating-point representation to this value. *^\\nKotlin.Long.prototype.toNumber =
function() {\\n return this.high_ * Kotlin.Long.TWO_PWR_32_DBL_ +\\n
this.getLowBitsUnsigned();\\n};\\n\\n/** @return {number} The 32-bit hashCode of this value.
*^\\nKotlin.Long.prototype.hashCode = function() {\\n return this.high_ ^ this.low_;\\n};\\n\\n/**\\n * @param
{number=} opt_radix The radix in which the text should be written.\\n * @return {string} The textual representation
of this value.\\n * @override\\n *^\\nKotlin.Long.prototype.toString = function(opt_radix) {\\n var radix = opt_radix ||
10;\\n if (radix < 2 || 36 < radix) {\\n throw Error('radix out of range: ' + radix);\\n }\\n\\n if (this.isZero()) {\\n
return '0';\\n }\\n\\n if (this.isNegative()) {\\n if (this.equalsLong(Kotlin.Long.MIN_VALUE)) {\\n // We need to
change the Long value before it can be negated, so we remove\\n // the bottom-most digit in this base and then
recurse to do the rest.\\n var radixLong = Kotlin.Long.fromNumber(radix);\\n var div = this.div(radixLong);\\n
var rem = div.multiply(radixLong).subtract(this);\\n return div.toString(radix) + rem.toInt().toString(radix);\\n }
else {\\n return '-' + this.negate().toString(radix);\\n }\\n }\\n\\n // Do several (6) digits each time through the loop,
so as to\\n // minimize the calls to the very expensive emulated div.\\n var radixToPower =
Kotlin.Long.fromNumber(Math.pow(radix, 6));\\n var rem = this;\\n var result = '';\\n while (true) {\\n var
remDiv = rem.div(radixToPower);\\n var intVal = rem.subtract(remDiv.multiply(radixToPower)).toInt();\\n var
digits = intVal.toString(radix);\\n rem = remDiv;\\n if (rem.isZero()) {\\n return digits + result;\\n } else {\\n
while (digits.length < 6) {\\n digits = '0' + digits;\\n }\\n result = '' + digits + result;\\n }\\n }\\n};\\n\\n/**
@return {number} The high 32-bits as a signed value. *^\\nKotlin.Long.prototype.getHighBits = function() {\\n
return this.high_;\\n};\\n\\n/** @return {number} The low 32-bits as a signed value.
*^\\nKotlin.Long.prototype.getLowBits = function() {\\n return this.low_;\\n};\\n\\n/** @return {number} The low
32-bits as an unsigned value. *^\\nKotlin.Long.prototype.getLowBitsUnsigned = function() {\\n return (this.low_ >=
0) ?\\n this.low_ : Kotlin.Long.TWO_PWR_32_DBL_ + this.low_;\\n};\\n\\n/**\\n * @return {number} Returns
the number of bits needed to represent the absolute\\n * value of this Long.\\n
*^\\nKotlin.Long.prototype.getNumBitsAbs = function() {\\n if (this.isNegative()) {\\n if
(this.equalsLong(Kotlin.Long.MIN_VALUE)) {\\n return 64;\\n } else {\\n return
this.negate().getNumBitsAbs();\\n }\\n } else {\\n var val = this.high_ != 0 ? this.high_ : this.low_;\\n for (var bit
= 31; bit > 0; bit--) {\\n if ((val & (1 << bit)) != 0) {\\n break;\\n }\\n }\\n return this.high_ != 0 ? bit + 33
: bit + 1;\\n }\\n};\\n\\n/** @return {boolean} Whether this value is zero. *^\\nKotlin.Long.prototype.isZero =
function() {\\n return this.high_ == 0 && this.low_ == 0;\\n};\\n\\n/** @return {boolean} Whether this value is
negative. *^\\nKotlin.Long.prototype.isNegative = function() {\\n return this.high_ < 0;\\n};\\n\\n/** @return
{boolean} Whether this value is odd. *^\\nKotlin.Long.prototype.isOdd = function() {\\n return (this.low_ & 1) ==
1;\\n};\\n\\n/**\\n * @param {Kotlin.Long} other Long to compare against.\\n * @return {boolean} Whether this
Long equals the other.\\n *^\\nKotlin.Long.prototype.equalsLong = function(other) {\\n return (this.high_ ==
other.high_) && (this.low_ == other.low_);\\n};\\n\\n/**\\n * @param {Kotlin.Long} other Long to compare
against.\\n * @return {boolean} Whether this Long does not equal the other.\\n
*^\\nKotlin.Long.prototype.notEqualsLong = function(other) {\\n return (this.high_ != other.high_) || (this.low_ !=
other.low_);\\n};\\n\\n/**\\n * @param {Kotlin.Long} other Long to compare against.\\n * @return {boolean}
Whether this Long is less than the other.\\n *^\\nKotlin.Long.prototype.lessThan = function(other) {\\n return
this.compare(other) < 0;\\n};\\n\\n/**\\n * @param {Kotlin.Long} other Long to compare against.\\n * @return
{boolean} Whether this Long is less than or equal to the other.\\n *^\\nKotlin.Long.prototype.lessThanOrEqual =
function(other) {\\n return this.compare(other) <= 0;\\n};\\n\\n/**\\n * @param {Kotlin.Long} other Long to

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compare against.\n * @return {boolean} Whether this Long is greater than the other.\n
*\nKotlin.Long.prototype.greaterThan = function(other) {\n return this.compare(other) > 0;\n};\n\n\n**\n *
@param {Kotlin.Long} other Long to compare against.\n * @return {boolean} Whether this Long is greater than or
equal to the other.\n *\nKotlin.Long.prototype.greaterThanOrEqual = function(other) {\n return
this.compare(other) >= 0;\n};\n\n\n**\n * Compares this Long with the given one.\n * @param {Kotlin.Long}
other Long to compare against.\n * @return {number} 0 if they are the same, 1 if the this is greater, and -1\n * if
the given one is greater.\n *\nKotlin.Long.prototype.compare = function(other) {\n if (this.equalsLong(other)) {\n
return 0;\n }\n\n var thisNeg = this.isNegative();\n var otherNeg = other.isNegative();\n if (thisNeg &&
!otherNeg) {\n return -1;\n }\n if (!thisNeg && otherNeg) {\n return 1;\n }\n\n // at this point, the signs are the
same, so subtraction will not overflow\n if (this.subtract(other).isNegative()) {\n return -1;\n } else {\n return
1;\n }\n};\n\n\n**\n * @return {!Kotlin.Long} The negation of this value. *\nKotlin.Long.prototype.negate =
function() {\n if (this.equalsLong(Kotlin.Long.MIN_VALUE)) {\n return Kotlin.Long.MIN_VALUE;\n } else
{\n return this.not().add(Kotlin.Long.ONE);\n }\n};\n\n\n**\n * Returns the sum of this and the given Long.\n *
@param {Kotlin.Long} other Long to add to this one.\n * @return {!Kotlin.Long} The sum of this and the given
Long.\n *\nKotlin.Long.prototype.add = function(other) {\n // Divide each number into 4 chunks of 16 bits, and
then sum the chunks.\n\n var a48 = this.high_ >>> 16;\n var a32 = this.high_ & 0xFFFF;\n var a16 = this.low_
>>> 16;\n var a00 = this.low_ & 0xFFFF;\n\n var b48 = other.high_ >>> 16;\n var b32 = other.high_ & 0xFFFF;\n
var b16 = other.low_ >>> 16;\n var b00 = other.low_ & 0xFFFF;\n\n var c48 = 0, c32 = 0, c16 = 0, c00 = 0;\n c00
+= a00 + b00;\n c16 += c00 >>> 16;\n c00 &= 0xFFFF;\n c16 += a16 + b16;\n c32 += c16 >>> 16;\n c16 &=
0xFFFF;\n c32 += a32 + b32;\n c48 += c32 >>> 16;\n c32 &= 0xFFFF;\n c48 += a48 + b48;\n c48 &=
0xFFFF;\n return Kotlin.Long.fromBits((c16 << 16) | c00, (c48 << 16) | c32);\n};\n\n\n**\n * Returns the
difference of this and the given Long.\n * @param {Kotlin.Long} other Long to subtract from this.\n * @return
{!Kotlin.Long} The difference of this and the given Long.\n *\nKotlin.Long.prototype.subtract = function(other)
{\n return this.add(other.negate());\n};\n\n\n**\n * Returns the product of this and the given long.\n * @param
{Kotlin.Long} other Long to multiply with this.\n * @return {!Kotlin.Long} The product of this and the other.\n
*\nKotlin.Long.prototype.multiply = function(other) {\n if (this.isZero()) {\n return Kotlin.Long.ZERO;\n } else
if (other.isZero()) {\n return Kotlin.Long.ZERO;\n }\n\n if (this.equalsLong(Kotlin.Long.MIN_VALUE)) {\n
return other.isOdd() ? Kotlin.Long.MIN_VALUE : Kotlin.Long.ZERO;\n } else if
(other.equalsLong(Kotlin.Long.MIN_VALUE)) {\n return this.isOdd() ? Kotlin.Long.MIN_VALUE :
Kotlin.Long.ZERO;\n }\n\n if (this.isNegative()) {\n if (other.isNegative()) {\n return
this.negate().multiply(other.negate());\n } else {\n return this.negate().multiply(other).negate();\n }\n } else if
(other.isNegative()) {\n return this.multiply(other.negate()).negate();\n }\n\n // If both longs are small, use float
multiplication\n if (this.lessThan(Kotlin.Long.TWO_PWR_24_) &&\n
other.lessThan(Kotlin.Long.TWO_PWR_24_)) {\n return Kotlin.Long.fromNumber(this.toNumber() *
other.toNumber());\n }\n\n // Divide each long into 4 chunks of 16 bits, and then add up 4x4 products.\n // We can
skip products that would overflow.\n\n var a48 = this.high_ >>> 16;\n var a32 = this.high_ & 0xFFFF;\n var a16 =
this.low_ >>> 16;\n var a00 = this.low_ & 0xFFFF;\n\n var b48 = other.high_ >>> 16;\n var b32 = other.high_ &
0xFFFF;\n var b16 = other.low_ >>> 16;\n var b00 = other.low_ & 0xFFFF;\n\n var c48 = 0, c32 = 0, c16 = 0, c00
= 0;\n c00 += a00 * b00;\n c16 += c00 >>> 16;\n c00 &= 0xFFFF;\n c16 += a16 * b00;\n c32 += c16 >>> 16;\n
c16 &= 0xFFFF;\n c16 += a00 * b16;\n c32 += c16 >>> 16;\n c16 &= 0xFFFF;\n c32 += a32 * b00;\n c48 +=
c32 >>> 16;\n c32 &= 0xFFFF;\n c32 += a16 * b16;\n c48 += c32 >>> 16;\n c32 &= 0xFFFF;\n c32 += a00 *
b32;\n c48 += c32 >>> 16;\n c32 &= 0xFFFF;\n c48 += a48 * b00 + a32 * b16 + a16 * b32 + a00 * b48;\n c48
&= 0xFFFF;\n return Kotlin.Long.fromBits((c16 << 16) | c00, (c48 << 16) | c32);\n};\n\n\n**\n * Returns this
Long divided by the given one.\n * @param {Kotlin.Long} other Long by which to divide.\n * @return
{!Kotlin.Long} This Long divided by the given one.\n *\nKotlin.Long.prototype.div = function(other) {\n if
(other.isZero()) {\n throw Error('division by zero');\n } else if (this.isZero()) {\n return Kotlin.Long.ZERO;\n
}\n\n if (this.equalsLong(Kotlin.Long.MIN_VALUE)) {\n if (other.equalsLong(Kotlin.Long.ONE) ||\n
other.equalsLong(Kotlin.Long.NEG_ONE)) {\n return Kotlin.Long.MIN_VALUE; // recall that -MIN_VALUE

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== MIN_VALUE\n } else if (other.equalsLong(Kotlin.Long.MIN_VALUE)) {\n return Kotlin.Long.ONE;\n
} else {\n // At this point, we have |other| >= 2, so |this/other| < |MIN_VALUE|.\n var halfThis =
this.shiftRight(1);\n var approx = halfThis.div(other).shiftLeft(1);\n if
(approx.equalsLong(Kotlin.Long.ZERO)) {\n return other.isNegative() ? Kotlin.Long.ONE :
Kotlin.Long.NEG_ONE;\n } else {\n var rem = this.subtract(other.multiply(approx));\n var result =
approx.add(rem.div(other));\n return result;\n }\n } else if
(other.equalsLong(Kotlin.Long.MIN_VALUE)) {\n return Kotlin.Long.ZERO;\n }\n\n if (this.isNegative()) {\n
if (other.isNegative()) {\n return this.negate().div(other.negate());\n } else {\n return
this.negate().div(other.negate());\n }\n } else if (other.isNegative()) {\n return
this.div(other.negate()).negate();\n }\n\n // Repeat the following until the remainder is less than other: find a\n //
floating-point that approximates remainder / other *from below*, add this\n // into the result, and subtract it from
the remainder. It is critical that\n // the approximate value is less than or equal to the real value so that the\n //
remainder never becomes negative.\n var res = Kotlin.Long.ZERO;\n var rem = this;\n while
(rem.greaterThanOrEqual(other)) {\n // Approximate the result of division. This may be a little greater or\n //
smaller than the actual value.\n var approx = Math.max(1, Math.floor(rem.toNumber() / other.toNumber()));\n\n
// We will tweak the approximate result by changing it in the 48-th digit or\n // the smallest non-fractional digit,
whichever is larger.\n var log2 = Math.ceil(Math.log(approx) / Math.LN2);\n var delta = (log2 <= 48) ? 1 :
Math.pow(2, log2 - 48);\n // Decrease the approximation until it is smaller than the remainder. Note\n // that if
it is too large, the product overflows and is negative.\n var approxRes = Kotlin.Long.fromNumber(approx);\n
var approxRem = approxRes.multiply(other);\n while (approxRem.isNegative() || approxRem.greaterThan(rem))
{\n approx -= delta;\n approxRes = Kotlin.Long.fromNumber(approx);\n approxRem =
approxRes.multiply(other);\n }\n\n // We know the answer can't be zero... and actually, zero would cause\n //
infinite recursion since we would make no progress.\n if (approxRes.isZero()) {\n approxRes =
Kotlin.Long.ONE;\n }\n\n res = res.add(approxRes);\n rem = rem.subtract(approxRem);\n }\n return
res;\n};\n\n\n/**\n * Returns this Long modulo the given one.\n * @param {Kotlin.Long} other Long by which to
mod.\n * @return {!Kotlin.Long} This Long modulo the given one.\n */\nKotlin.Long.prototype.modulo =
function(other) {\n return this.subtract(this.div(other).multiply(other));\n};\n\n\n/**\n * @return {!Kotlin.Long} The
bitwise-NOT of this value.\n */\nKotlin.Long.prototype.not = function() {\n return Kotlin.Long.fromBits(~this.low_,
~this.high_);\n};\n\n\n/**\n * Returns the bitwise-AND of this Long and the given one.\n * @param {Kotlin.Long}
other The Long with which to AND.\n * @return {!Kotlin.Long} The bitwise-AND of this and the other.\n */\n
Kotlin.Long.prototype.and = function(other) {\n return Kotlin.Long.fromBits(this.low_ & other.low_,\n
this.high_ & other.high_);\n};\n\n\n/**\n * Returns the bitwise-OR of this Long and the given one.\n *
@param {Kotlin.Long} other The Long with which to OR.\n * @return {!Kotlin.Long} The bitwise-OR of this and
the other.\n */\nKotlin.Long.prototype.or = function(other) {\n return Kotlin.Long.fromBits(this.low_ |
other.low_,\n this.high_ | other.high_);\n};\n\n\n/**\n * Returns the bitwise-XOR of this Long
and the given one.\n * @param {Kotlin.Long} other The Long with which to XOR.\n * @return {!Kotlin.Long}
The bitwise-XOR of this and the other.\n */\nKotlin.Long.prototype.xor = function(other) {\n return
Kotlin.Long.fromBits(this.low_ ^ other.low_,\n this.high_ ^ other.high_);\n};\n\n\n/**\n * Returns this Long with bits shifted to the left by the given amount.\n * @param {number} numBits The number of
bits by which to shift.\n * @return {!Kotlin.Long} This shifted to the left by the given amount.\n */\n
Kotlin.Long.prototype.shiftLeft = function(numBits) {\n numBits &= 63;\n if (numBits == 0) {\n return
this;\n } else {\n var low = this.low_;\n if (numBits < 32) {\n var high = this.high_;\n return
Kotlin.Long.fromBits(\n low << numBits,\n (high << numBits) | (low >>> (32 - numBits)));\n } else
{\n return Kotlin.Long.fromBits(0, low << (numBits - 32));\n }\n }\n};\n\n\n/**\n * Returns this Long with
bits shifted to the right by the given amount.\n * @param {number} numBits The number of bits by which to shift.\n
* @return {!Kotlin.Long} This shifted to the right by the given amount.\n */\nKotlin.Long.prototype.shiftRight =
function(numBits) {\n numBits &= 63;\n if (numBits == 0) {\n return this;\n } else {\n var high = this.high_;\n
if (numBits < 32) {\n var low = this.low_;\n return Kotlin.Long.fromBits(\n (low >>> numBits) | (high

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<< (32 - numBits)),\n      high >> numBits);\n } else {\n     return Kotlin.Long.fromBits(\n         high >>
(numBits - 32),\n         high >= 0 ? 0 : -1);\n } }\n};\n\n\n/*\n * Returns this Long with bits shifted to the right
by the given amount, with\n * zeros placed into the new leading bits.\n * @param {number} numBits The number
of bits by which to shift.\n * @return {!Kotlin.Long} This shifted to the right by the given amount, with\n *
zeros placed into the new leading bits.\n */\nKotlin.Long.prototype.shiftRightUnsigned = function(numBits) {\n    numBits
&= 63;\n    if (numBits == 0) {\n        return this;\n    } else {\n        var high = this.high_;\n        if (numBits < 32) {\n            var
low = this.low_;\n            return Kotlin.Long.fromBits(\n                (low >>> numBits) | (high << (32 - numBits)),\n                high >>> numBits);\n        } else if (numBits == 32) {\n            return Kotlin.Long.fromBits(high, 0);\n        } else {\n            return Kotlin.Long.fromBits(high >>> (numBits - 32), 0);\n        }\n    }\n};\n\n// Support for
Kotlin\nKotlin.Long.prototype.equals = function (other) {\n    return other instanceof Kotlin.Long &&
this.equalsLong(other);\n};\n\nKotlin.Long.prototype.compareTo_11rb$ =
Kotlin.Long.prototype.compare;\n\nKotlin.Long.prototype.inc = function() {\n    return
this.add(Kotlin.Long.ONE);\n};\n\nKotlin.Long.prototype.dec = function() {\n    return
this.add(Kotlin.Long.NEG_ONE);\n};\n\nKotlin.Long.prototype.valueOf = function() {\n    return
this.toNumber();\n};\n\nKotlin.Long.prototype.unaryPlus = function() {\n    return
this;\n};\n\nKotlin.Long.prototype.unaryMinus = Kotlin.Long.prototype.negate;\n\nKotlin.Long.prototype.inv =
Kotlin.Long.prototype.not;\n\nKotlin.Long.prototype.rangeTo = function (other) {\n    return new
Kotlin.kotlin.ranges.LongRange(this, other);\n};\n\n\n/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin
Programming Language contributors. \n * Use of this source code is governed by the Apache 2.0 license that can be
found in the license/LICENSE.txt file.\n */\n\n\n/*\n * @param {string} id\n * @param {Object} declaration\n */\n\nKotlin.defineModule = function (id, declaration) {\n};\n\n\nKotlin.defineInlineFunction = function(tag, fun) {\n    return fun;\n};\n\n\nKotlin.wrapFunction = function(fun) {\n    var f = function() {\n        f = fun();\n        return
f.apply(this, arguments);\n    }; \n    return function() {\n        return f.apply(this, arguments);\n    };\n};\n\n\nKotlin.isTypeOf = function(type) {\n    return function (object) {\n        return typeof object === type;\n    };\n};\n\n\nKotlin.isInstanceOf = function (klass) {\n    return function (object) {\n        return Kotlin.isType(object,
klass);\n    };\n};\n\n\nKotlin.orNull = function (fn) {\n    return function (object) {\n        return object == null ||
fn(object);\n    };\n};\n\n\nKotlin.andPredicate = function (a, b) {\n    return function (object) {\n        return a(object)
&& b(object);\n    };\n};\n\n\nKotlin.kotlinModuleMetadata = function (abiVersion, moduleName, data)
{\n};\n\n\nKotlin.suspendCall = function(value) {\n    return value;\n};\n\n\nKotlin.coroutineResult = function(qualifier)
{\n    throwMarkerError();\n};\n\n\nKotlin.coroutineController = function(qualifier) {\n    throwMarkerError();\n};\n\n\nKotlin.coroutineReceiver = function(qualifier) {\n    throwMarkerError();\n};\n\n\nKotlin.setCoroutineResult = function(value, qualifier) {\n    throwMarkerError();\n};\n\n\nKotlin.getReifiedTypeParameterKType = function(typeParameter) {\n    throwMarkerError();\n};\n\n\nfunction throwMarkerError() {\n    throw new Error(\n        \"This marker function
should never be called. \" +\n        \"Looks like compiler did not eliminate it properly. \" +\n        \"Please, report
an issue if you caught this exception.\");\n}\n\n\nKotlin.getFunctionById = function(id, defaultValue) {\n    return
function() {\n        return defaultValue;\n    };\n};\n\n\n\n/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin
Programming Language contributors. \n * Use of this source code is governed by the Apache 2.0 license that can be
found in the license/LICENSE.txt file.\n */\n\n\n\nKotlin.compareTo = function (a, b) {\n    var typeA = typeof a;\n    if
(typeA === \"number\") {\n        if (typeof b === \"number\") {\n            return Kotlin.doubleCompareTo(a, b);\n        }
\n        return Kotlin.primitiveCompareTo(a, b);\n    } \n    if (typeA === \"string\" || typeA === \"boolean\") {\n        return
Kotlin.primitiveCompareTo(a, b);\n    } \n    return
a.compareTo_11rb$(b);\n};\n\n\nKotlin.primitiveCompareTo = function (a, b) {\n    return a < b ? -1 : a > b ? 1 :
0;\n};\n\n\nKotlin.doubleCompareTo = function (a, b) {\n    if (a < b) return -1;\n    if (a > b) return 1;\n\n    if (a ===
b) {\n        if (a !== 0) return 0;\n\n        var ia = 1 / a;\n        return ia === 1 / b ? 0 : (ia < 0 ? -1 : 1);\n    }\n\n    return a !== a ? (b !== b ? 0 : 1) : -1;\n};\n\n\nKotlin.charInc = function (value) {\n    return
Kotlin.toChar(value+1);\n};\n\n\nKotlin.charDec = function (value) {\n    return Kotlin.toChar(value-
1);\n};\n\n\nKotlin.imul = Math.imul || imul;\n\n\nKotlin.imulEmulated = imul;\n\n\nfunction imul(a, b) {\n    return ((a &

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0xffff0000) * (b & 0xffff) + (a & 0xffff) * (b | 0)) | 0;\n}\n\n(function() {\n    var buf = new ArrayBuffer(8);\n    var
bufFloat64 = new Float64Array(buf);\n    var bufFloat32 = new Float32Array(buf);\n    var bufInt32 = new
Int32Array(buf);\n    var lowIndex = 0;\n    var highIndex = 1;\n\n    bufFloat64[0] = -1; // bff00000_00000000\n    if
(bufInt32[lowIndex] !== 0) {\n        lowIndex = 1;\n        highIndex = 0;\n    }\n\n    Kotlin.doubleToBits =
function(value) {\n        return Kotlin.doubleToRawBits(isNaN(value) ? NaN : value);\n    };\n\n    Kotlin.doubleToRawBits = function(value) {\n        bufFloat64[0] = value;\n        return
Kotlin.Long.fromBits(bufInt32[lowIndex], bufInt32[highIndex]);\n    };\n\n    Kotlin.doubleFromBits =
function(value) {\n        bufInt32[lowIndex] = value.low_;\n        bufInt32[highIndex] = value.high_;\n        return
bufFloat64[0];\n    };\n\n    Kotlin.floatToBits = function(value) {\n        return Kotlin.floatToRawBits(isNaN(value)
? NaN : value);\n    };\n\n    Kotlin.floatToRawBits = function(value) {\n        bufFloat32[0] = value;\n        return
bufInt32[0];\n    };\n\n    Kotlin.floatFromBits = function(value) {\n        bufInt32[0] = value;\n        return
bufFloat32[0];\n    };\n\n    // returns zero value for number with positive sign bit and non-zero value for number
with negative sign bit.\n    Kotlin.doubleSignBit = function(value) {\n        bufFloat64[0] = value;\n        return
bufInt32[highIndex] & 0x80000000;\n    };\n\n    Kotlin.numberHashCode = function(obj) {\n        if ((obj | 0) ===
obj) {\n            return obj | 0;\n        }\n        else {\n            bufFloat64[0] = obj;\n            return (bufInt32[highIndex]
* 31 | 0) + bufInt32[lowIndex] | 0;\n        }\n    });\n\n    Kotlin.ensureNotNull = function(x) {\n        return x != null
? x : Kotlin.throwNPE();\n    };
\n\n    /*\n    * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n    * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n    */\n\n    nif (typeof String.prototype.startsWith === \"undefined\") {\n
String.prototype.startsWith = function(searchString, position) {\n        position = position || 0;\n        return
this.lastIndexOf(searchString, position) === position;\n    };\n\n    nif (typeof String.prototype.endsWith ===
\"undefined\") {\n        String.prototype.endsWith = function(searchString, position) {\n            var subjectString =
this.toString();\n            if (position === undefined || position > subjectString.length) {\n                position =
subjectString.length;\n            }\n            position -= searchString.length;\n            var lastIndex =
subjectString.indexOf(searchString, position);\n            return lastIndex !== -1 && lastIndex === position;\n        };\n    }\n\n    // ES6 Math polyfills\n    nif (typeof Math.sign === \"undefined\") {\n        Math.sign = function(x) {\n            x = +x;\n            // convert to a number\n            if (x === 0 || isNaN(x)) {\n                return Number(x);\n            }\n            return x > 0 ? 1 : -
1;\n        };\n    }\n\n    nif (typeof Math.trunc === \"undefined\") {\n        Math.trunc = function(x) {\n            if (isNaN(x)) {\n
return NaN;\n            }\n            if (x > 0) {\n                return Math.floor(x);\n            }\n            return Math.ceil(x);\n        };\n    }\n\n    (function() {\n        var epsilon = 2.220446049250313E-16;\n        var taylor_2_bound = Math.sqrt(epsilon);\n        var taylor_n_bound = Math.sqrt(taylor_2_bound);\n        var upper_taylor_2_bound = 1/taylor_2_bound;\n        var
upper_taylor_n_bound = 1/taylor_n_bound;\n\n        if (typeof Math.sinh === \"undefined\") {\n            Math.sinh =
function(x) {\n                if (Math.abs(x) < taylor_n_bound) {\n                    var result = x;\n                    if (Math.abs(x) >
taylor_2_bound) {\n                        result += (x * x * x) / 6;\n                    }\n                    return result;\n                } else {\n
                    var y = Math.exp(x);\n                    var y1 = 1 / y;\n                    if (!isFinite(y)) return Math.exp(x - Math.LN2);\n                    if (!isFinite(y1)) return -Math.exp(-x - Math.LN2);\n                    return (y - y1) / 2;\n                }\n            };\n        }\n\n        if (typeof Math.cosh === \"undefined\") {\n            Math.cosh = function(x) {\n                var y = Math.exp(x);\n                var y1 = 1 / y;\n                if (!isFinite(y) || !isFinite(y1)) return Math.exp(Math.abs(x) - Math.LN2);\n                return (y + y1) / 2;\n            };\n        }\n\n        if (typeof Math.tanh === \"undefined\") {\n            Math.tanh = function(x) {\n                if (Math.abs(x) < taylor_n_bound) {\n                    var result = x;\n                    if (Math.abs(x) > taylor_2_bound) {\n                        result -= (x * x * x) / 3;\n                    }\n                    return result;\n                } else {\n                    var a =
Math.exp(+x), b = Math.exp(-x);\n                    return a === Infinity ? 1 : b === Infinity ? -1 : (a - b) / (a + b);\n                }\n            };\n        }\n\n        // Inverse hyperbolic function implementations derived from boost special math functions,\n        // Copyright Eric Ford & Hubert Holin 2001.\n\n        if (typeof Math.asinh === \"undefined\") {\n            var asinh =
function(x) {\n                if (x >= +taylor_n_bound)\n                    {\n                        if (x > upper_taylor_n_bound)\n                            {\n                                // approximation by laurent series in
1/x at 0+ order from -1 to 0\n                                return Math.log(x) + Math.LN2;\n                            }\n                            else\n                                {\n                                    // approximation by laurent series in 1/x at 0+ order from -1 to 1\n                                    return
}

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Math.log(x * 2 + (1 / (x * 2)));
Math.log(x + Math.sqrt(x * x + 1));
return -asinh(-x);
else
{
return
Math.log(x + Math.sqrt(x * x + 1));
}
else if (x <= -taylor_n_bound)
{
return -asinh(-x);
}
else
{
// approximation by taylor series in x at 0 up to
order 2
var result = x;
if (Math.abs(x) >= taylor_2_bound)
{
var x3 =
x * x * x;
// approximation by taylor series in x at 0 up to order 4
result -= x3 / 6;
}
return result;
};
Math.asinh = asinh;
}
if (typeof Math.acosh ===
"undefined")
{
Math.acosh = function(x)
{
if (x < 1)
{
return NaN;
}
else if (x - 1 >= taylor_n_bound)
{
if (x > upper_taylor_2_bound)
{
// approximation by laurent series in 1/x at 0+ order from -1 to 0
return Math.log(x) + Math.LN2;
}
else
{
return Math.log(x + Math.sqrt(x * x - 1));
}
}
else
{
var y = Math.sqrt(x - 1);
// approximation by taylor series in y at 0
up to order 2
var result = y;
if (y >= taylor_2_bound)
{
var y3 = y *
y * y;
// approximation by taylor series in y at 0 up to order 4
result -= y3 / 12;
}
return Math.sqrt(2) * result;
};
}
if (typeof Math.atanh === "undefined")
{
Math.atanh = function(x)
{
if (Math.abs(x) < taylor_n_bound)
{
var result = x;
if (Math.abs(x) > taylor_2_bound)
{
result += (x * x * x) / 3;
}
return result;
}
return Math.log((1 + x) / (1 - x)) / 2;
};
}
if (typeof Math.log1p === "undefined")
{
Math.log1p = function(x)
{
if (Math.abs(x) < taylor_n_bound)
{
var x2 = x * x;
var x3 = x2 * x;
var x4 = x3 * x;
// approximation by taylor series in x at 0 up to order 4
return (-x4 / 4 + x3 / 3 - x2 / 2 + x);
}
return Math.log(x + 1);
};
}
if (typeof
Math.expm1 === "undefined")
{
Math.expm1 = function(x)
{
if (Math.abs(x) < taylor_n_bound)
{
var x2 = x * x;
var x3 = x2 * x;
var x4 = x3 * x;
// approximation by
taylor series in x at 0 up to order 4
return (x4 / 24 + x3 / 6 + x2 / 2 + x);
}
return
Math.exp(x) - 1;
};
}
}
}
if (typeof Math.hypot === "undefined")
{
Math.hypot = function()
{
var y = 0;
var length = arguments.length;
for (var i = 0; i < length; i++)
{
if (arguments[i]
=== Infinity || arguments[i] === -Infinity)
{
return Infinity;
}
y += arguments[i] *
arguments[i];
}
return Math.sqrt(y);
};
}
}
if (typeof Math.log10 === "undefined")
{
Math.log10 = function(x)
{
return Math.log(x) * Math.LOG10E;
};
}
}
if (typeof Math.log2 ===
"undefined")
{
Math.log2 = function(x)
{
return Math.log(x) * Math.LOG2E;
};
}
}
if (typeof
Math.clz32 === "undefined")
{
Math.clz32 = (function(log, LN2)
{
return function(x)
{
var
asUint = x >>> 0;
if (asUint === 0)
{
return 32;
}
return 31 - (log(asUint) /
LN2 | 0) | 0; // the "| 0" acts like math.floor
})(Math.log, Math.LN2);
}
}
}
}
if (typeof ArrayBuffer.isView === "undefined")
{
ArrayBuffer.isView = function(a)
{
return a != null && a.__proto__ != null && a.__proto__.__proto__ === Int8Array.prototype.__proto__;
};
}
}
if (typeof Array.prototype.fill === "undefined")
{
// Polyfill from https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array/fill#Polyfill
Array.prototype.fill = function()
{
// Steps 1-2.
if (this == null)
{
throw new TypeError('this is null or not defined');
}
var O =
Object(this);
// Steps 3-5.
var len = O.length >>> 0;
// Steps 6-7.
var start = arguments[1];
var relativeStart = start >> 0;
// Step 8.
var k = relativeStart < 0 ? Math.max(len + relativeStart,
0) : Math.min(relativeStart, len);
// Steps 9-10.
var end = arguments[2];
var relativeEnd =
end === undefined ? len : end >> 0;
// Step 11.
var final = relativeEnd < 0 ? Math.max(len
+ relativeEnd, 0) : Math.min(relativeEnd, len);
// Step 12.
while (k < final)
{
O[k] =
value;
k++;
}
// Step 13.
return O;
};
}
}
}
(function()
{
function
normalizeOffset(offset, length)
{
if (offset < 0)
return Math.max(0, offset + length);
return
Math.min(offset, length);
}
function typedArraySlice(begin, end)
{
if (typeof end === "undefined")
{
end = this.length;
}
begin = normalizeOffset(begin || 0, this.length);
end =
Math.max(begin, normalizeOffset(end, this.length));
return new this.constructor(this.subarray(begin, end));
}
var arrays = [Int8Array, Int16Array, Uint16Array, Int32Array, Float32Array, Float64Array];
for (var i =

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0; i < arrays.length; ++i) {\n    var TypedArray = arrays[i];\n    if (typeof TypedArray.prototype.fill ===
\"undefined\") {\n        TypedArray.prototype.fill = Array.prototype.fill;\n    }\n    if (typeof
TypedArray.prototype.slice === \"undefined\") {\n        Object.defineProperty(TypedArray.prototype, 'slice', {\n
        value: typedArraySlice\n        });\n    }\n}\n\n // Patch apply to work with TypedArrays if needed.\n
try {\n    (function() {}).apply(null, new Int32Array(0))\n } catch (e) {\n    var apply =
Function.prototype.apply;\n    Object.defineProperty(Function.prototype, 'apply', {\n        value: function(self,
array) {\n            return apply.call(this, self, [].slice.call(array));\n        }\n    });\n}\n\n // Patch map to
work with TypedArrays if needed.\n for (var i = 0; i < arrays.length; ++i) {\n    var TypedArray = arrays[i];\n
if (typeof TypedArray.prototype.map === \"undefined\") {\n        Object.defineProperty(TypedArray.prototype,
'map', {\n            value: function(callback, self) {\n                return [].slice.call(this).map(callback, self);\n
            }\n        });\n    }\n}\n\n // Patch sort to work with TypedArrays if needed.\n // TODO: consider to
remove following function and replace it with `Kotlin.doubleCompareTo` (see misc.js)\n var
totalOrderComparator = function (a, b) {\n    if (a < b) return -1;\n    if (a > b) return 1;\n\n    if (a === b) {\n
        if (a !== 0) return 0;\n        var ia = 1 / a;\n        return ia === 1 / b ? 0 : (ia < 0 ? -1 : 1);\n    }\n
return a !== a ? (b !== b ? 0 : 1) : -1\n }; \n\n for (var i = 0; i < arrays.length; ++i) {\n    var TypedArray =
arrays[i];\n    if (typeof TypedArray.prototype.sort === \"undefined\") {\n
Object.defineProperty(TypedArray.prototype, 'sort', {\n        value: function(compareFunction) {\n
return Array.prototype.sort.call(this, compareFunction || totalOrderComparator);\n        }\n    });\n}\n
}\n\n});\n\n\"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors. \n * Use
of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*/\n\nKotlin.Kind = {\n    CLASS: \"class\",\n    INTERFACE: \"interface\",\n    OBJECT:
\"object\"\n};\n\nKotlin.callGetter = function (thisObject, klass, propertyName) {\n    var propertyDescriptor =
Object.getOwnPropertyDescriptor(klass, propertyName);\n    if (propertyDescriptor != null &&
propertyDescriptor.get != null) {\n        return propertyDescriptor.get.call(thisObject);\n    }\n\n    propertyDescriptor
= Object.getOwnPropertyDescriptor(thisObject, propertyName);\n    if (propertyDescriptor != null && \"value\" in
propertyDescriptor) {\n        return thisObject[propertyName];\n    }\n\n    return Kotlin.callGetter(thisObject,
Object.getPrototypeOf(klass), propertyName);\n};\n\nKotlin.callSetter = function (thisObject, klass, propertyName,
value) {\n    var propertyDescriptor = Object.getOwnPropertyDescriptor(klass, propertyName);\n    if
(propertyDescriptor != null && propertyDescriptor.set != null) {\n        propertyDescriptor.set.call(thisObject,
value);\n        return;\n    }\n\n    propertyDescriptor = Object.getOwnPropertyDescriptor(thisObject,
propertyName);\n    if (propertyDescriptor != null && \"value\" in propertyDescriptor) {\n
thisObject[propertyName] = value;\n        return;\n    }\n\n    Kotlin.callSetter(thisObject,
Object.getPrototypeOf(klass), propertyName, value);\n};\n\nfunction isInheritanceFromInterface(ctor, iface) {\n    if
(ctor === iface) return true;\n    var metadata = ctor.$metadata$;\n    if (metadata != null) {\n        var interfaces =
metadata.interfaces;\n        for (var i = 0; i < interfaces.length; i++) {\n            if
(isInheritanceFromInterface(interfaces[i], iface)) {\n                return true;\n            }\n        }\n    }\n\n    var
superPrototype = ctor.prototype != null ? Object.getPrototypeOf(ctor.prototype) : null;\n    var superConstructor =
superPrototype != null ? superPrototype.constructor : null;\n    return superConstructor != null &&
isInheritanceFromInterface(superConstructor, iface);\n}\n\n**\n * @param {*} object\n * @param
{Function|Object} klass\n * @returns {Boolean}\n */\n\nKotlin.isType = function (object, klass) {\n    if (klass ===
Object) {\n        switch (typeof object) {\n            case \"string\":\n            case \"number\":\n            case
\"boolean\":\n            case \"function\":\n                return true;\n            default:\n                return object instanceof
Object;\n        }\n    }\n\n    if (object == null || klass == null || (typeof object !== 'object' && typeof object !==
'function')) {\n        return false;\n    }\n\n    if (typeof klass === \"function\" && object instanceof klass) {\n
return true;\n    }\n\n    var proto = Object.getPrototypeOf(klass);\n    var constructor = proto != null ?
proto.constructor : null;\n    if (constructor != null && \"$metadata$\" in constructor) {\n        var metadata =
constructor.$metadata$;\n        if (metadata.kind === Kotlin.Kind.OBJECT) {\n            return object === klass;\n
        }\n    }\n\n    var klassMetadata = klass.$metadata$;\n\n    // In WebKit (JavaScriptCore) for some interfaces from

```

```

DOM typeof returns \"object\", nevertheless they can be used in RHS of instanceof\n  if (classMetadata == null)
{\n    return object instanceof class;\n  }\n\n  if (classMetadata.kind === Kotlin.Kind.INTERFACE &&
object.constructor != null) {\n    return isInheritanceFromInterface(object.constructor, class);\n  }\n\n  return
false;\n};\n\nKotlin.isNumber = function (a) {\n  return typeof a == \"number\" || a instanceof
Kotlin.Long;\n};\n\nKotlin.isChar = function (value) {\n  return value instanceof
Kotlin.BoxedChar;\n};\n\nKotlin.isComparable = function (value) {\n  var type = typeof value;\n\n  return type
=== \"string\" ||\n    type === \"boolean\" ||\n    Kotlin.isNumber(value) ||\n    Kotlin.isType(value,
Kotlin.kotlin.Comparable);\n};\n\nKotlin.isCharSequence = function (value) {\n  return typeof value === \"string\"
|| Kotlin.isType(value, Kotlin.kotlin.CharSequence);\n};\n\n\"/*\n * Copyright 2010-2018 JetBrains s.r.o. and
Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that
can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin\n\npublic class Enum<T> : Enum<T>> :
Comparable<Enum<T>> {\n  @JsName(\"name$\") private var _name: String = \"\"\n  @JsName(\"ordinal$\")
private var _ordinal: Int = 0\n\n  val name: String\n    get() = _name\n\n  val ordinal: Int\n    get() =
_ordinal\n\n  override fun compareTo(other: Enum<T>) = ordinal.compareTo(other.ordinal)\n\n  override fun
equals(other: Any?) = this === other\n\n  override fun hashCode(): Int = js(\"Kotlin.identityHashCode\")(this)\n\n
override fun toString() = name\n\n  companion object\n}\n\n\"/*\n * Copyright 2010-2019 JetBrains s.r.o. and
Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that
can be found in the license/LICENSE.txt file.\n */\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName(\"ArraysKt\")\n\npackage
kotlin.collections\n\n/\n\n// NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt\n\n// See:
https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib\n\n/\n\nimport kotlin.random.*\n\nimport
kotlin.ranges.contains\n\nimport kotlin.ranges.reversed\n\n\n/**\n * Returns 1st *element* from the array.\n * \n * If
the size of this array is less than 1, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n * where the behavior
is unspecified.\n */\n\n@kotlin.internal.InlineOnly\n\npublic inline operator fun <T> Array<out T>.component1(): T
{\n  return get(0)\n}\n\n/**\n * Returns 1st *element* from the array.\n * \n * If the size of this array is less than 1,
throws an [IndexOutOfBoundsException] except in Kotlin/JS\n * where the behavior is unspecified.\n */\n\n@kotlin.internal.InlineOnly\n\npublic inline operator fun ByteArray.component1(): Byte {\n  return
get(0)\n}\n\n/**\n * Returns 1st *element* from the array.\n * \n * If the size of this array is less than 1, throws an
[IndexOutOfBoundsException] except in Kotlin/JS\n * where the behavior is unspecified.\n */\n\n@kotlin.internal.InlineOnly\n\npublic inline operator fun ShortArray.component1(): Short {\n  return
get(0)\n}\n\n/**\n * Returns 1st *element* from the array.\n * \n * If the size of this array is less than 1, throws an
[IndexOutOfBoundsException] except in Kotlin/JS\n * where the behavior is unspecified.\n */\n\n@kotlin.internal.InlineOnly\n\npublic inline operator fun IntArray.component1(): Int {\n  return
get(0)\n}\n\n/**\n * Returns 1st *element* from the array.\n * \n * If the size of this array is less than 1, throws an
[IndexOutOfBoundsException] except in Kotlin/JS\n * where the behavior is unspecified.\n */\n\n@kotlin.internal.InlineOnly\n\npublic inline operator fun LongArray.component1(): Long {\n  return
get(0)\n}\n\n/**\n * Returns 1st *element* from the array.\n * \n * If the size of this array is less than 1, throws an
[IndexOutOfBoundsException] except in Kotlin/JS\n * where the behavior is unspecified.\n */\n\n@kotlin.internal.InlineOnly\n\npublic inline operator fun FloatArray.component1(): Float {\n  return
get(0)\n}\n\n/**\n * Returns 1st *element* from the array.\n * \n * If the size of this array is less than 1, throws an
[IndexOutOfBoundsException] except in Kotlin/JS\n * where the behavior is unspecified.\n */\n\n@kotlin.internal.InlineOnly\n\npublic inline operator fun DoubleArray.component1(): Double {\n  return
get(0)\n}\n\n/**\n * Returns 1st *element* from the array.\n * \n * If the size of this array is less than 1, throws an
[IndexOutOfBoundsException] except in Kotlin/JS\n * where the behavior is unspecified.\n */\n\n@kotlin.internal.InlineOnly\n\npublic inline operator fun BooleanArray.component1(): Boolean {\n  return
get(0)\n}\n\n/**\n * Returns 1st *element* from the array.\n * \n * If the size of this array is less than 1, throws an
[IndexOutOfBoundsException] except in Kotlin/JS\n * where the behavior is unspecified.\n */\n\n@kotlin.internal.InlineOnly\n\npublic inline operator fun CharArray.component1(): Char {\n  return

```

`get(0)`\n\n\*\*\n \* Returns 2nd \*element\* from the array.\n \* \n \* If the size of this array is less than 2, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun <T> Array<out T>.component2(): T` {\n return

`get(1)`\n\n\*\*\n \* Returns 2nd \*element\* from the array.\n \* \n \* If the size of this array is less than 2, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun ByteArray.component2(): Byte` {\n return

`get(1)`\n\n\*\*\n \* Returns 2nd \*element\* from the array.\n \* \n \* If the size of this array is less than 2, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun ShortArray.component2(): Short` {\n return

`get(1)`\n\n\*\*\n \* Returns 2nd \*element\* from the array.\n \* \n \* If the size of this array is less than 2, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun IntArray.component2(): Int` {\n return

`get(1)`\n\n\*\*\n \* Returns 2nd \*element\* from the array.\n \* \n \* If the size of this array is less than 2, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun LongArray.component2(): Long` {\n return

`get(1)`\n\n\*\*\n \* Returns 2nd \*element\* from the array.\n \* \n \* If the size of this array is less than 2, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun FloatArray.component2(): Float` {\n return

`get(1)`\n\n\*\*\n \* Returns 2nd \*element\* from the array.\n \* \n \* If the size of this array is less than 2, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun DoubleArray.component2(): Double` {\n return

`get(1)`\n\n\*\*\n \* Returns 2nd \*element\* from the array.\n \* \n \* If the size of this array is less than 2, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun BooleanArray.component2(): Boolean` {\n return

`get(1)`\n\n\*\*\n \* Returns 2nd \*element\* from the array.\n \* \n \* If the size of this array is less than 2, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun CharArray.component2(): Char` {\n return

`get(1)`\n\n\*\*\n \* Returns 3rd \*element\* from the array.\n \* \n \* If the size of this array is less than 3, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun <T> Array<out T>.component3(): T` {\n return

`get(2)`\n\n\*\*\n \* Returns 3rd \*element\* from the array.\n \* \n \* If the size of this array is less than 3, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun ByteArray.component3(): Byte` {\n return

`get(2)`\n\n\*\*\n \* Returns 3rd \*element\* from the array.\n \* \n \* If the size of this array is less than 3, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun ShortArray.component3(): Short` {\n return

`get(2)`\n\n\*\*\n \* Returns 3rd \*element\* from the array.\n \* \n \* If the size of this array is less than 3, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun IntArray.component3(): Int` {\n return

`get(2)`\n\n\*\*\n \* Returns 3rd \*element\* from the array.\n \* \n \* If the size of this array is less than 3, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun LongArray.component3(): Long` {\n return

`get(2)`\n\n\*\*\n \* Returns 3rd \*element\* from the array.\n \* \n \* If the size of this array is less than 3, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun FloatArray.component3(): Float` {\n return

`get(2)`\n\n\*\*\n \* Returns 3rd \*element\* from the array.\n \* \n \* If the size of this array is less than 3, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun DoubleArray.component3(): Double` {\n return



`get(2)`\n\n\*\*\n \* Returns 3rd \*element\* from the array.\n \* \n \* If the size of this array is less than 3, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun BooleanArray.component3(): Boolean {\n return`

`get(2)`\n\n\*\*\n \* Returns 3rd \*element\* from the array.\n \* \n \* If the size of this array is less than 3, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun CharArray.component3(): Char {\n return`

`get(2)`\n\n\*\*\n \* Returns 4th \*element\* from the array.\n \* \n \* If the size of this array is less than 4, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun <T> Array<out T>.component4(): T {\n return`

`get(3)`\n\n\*\*\n \* Returns 4th \*element\* from the array.\n \* \n \* If the size of this array is less than 4, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun ByteArray.component4(): Byte {\n return`

`get(3)`\n\n\*\*\n \* Returns 4th \*element\* from the array.\n \* \n \* If the size of this array is less than 4, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun ShortArray.component4(): Short {\n return`

`get(3)`\n\n\*\*\n \* Returns 4th \*element\* from the array.\n \* \n \* If the size of this array is less than 4, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun IntArray.component4(): Int {\n return`

`get(3)`\n\n\*\*\n \* Returns 4th \*element\* from the array.\n \* \n \* If the size of this array is less than 4, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun LongArray.component4(): Long {\n return`

`get(3)`\n\n\*\*\n \* Returns 4th \*element\* from the array.\n \* \n \* If the size of this array is less than 4, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun FloatArray.component4(): Float {\n return`

`get(3)`\n\n\*\*\n \* Returns 4th \*element\* from the array.\n \* \n \* If the size of this array is less than 4, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun DoubleArray.component4(): Double {\n return`

`get(3)`\n\n\*\*\n \* Returns 4th \*element\* from the array.\n \* \n \* If the size of this array is less than 4, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun BooleanArray.component4(): Boolean {\n return`

`get(3)`\n\n\*\*\n \* Returns 4th \*element\* from the array.\n \* \n \* If the size of this array is less than 4, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun CharArray.component4(): Char {\n return`

`get(3)`\n\n\*\*\n \* Returns 5th \*element\* from the array.\n \* \n \* If the size of this array is less than 5, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun <T> Array<out T>.component5(): T {\n return`

`get(4)`\n\n\*\*\n \* Returns 5th \*element\* from the array.\n \* \n \* If the size of this array is less than 5, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun ByteArray.component5(): Byte {\n return`

`get(4)`\n\n\*\*\n \* Returns 5th \*element\* from the array.\n \* \n \* If the size of this array is less than 5, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun ShortArray.component5(): Short {\n return`

`get(4)`\n\n\*\*\n \* Returns 5th \*element\* from the array.\n \* \n \* If the size of this array is less than 5, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun IntArray.component5(): Int {\n return`

`get(4)`\n\n\*\*\n \* Returns 5th \*element\* from the array.\n \* \n \* If the size of this array is less than 5, throws an `[IndexOutOfBoundsException]` except in Kotlin/JS\n \* where the behavior is unspecified.\n

`*\n@kotlin.internal.InlineOnly\npublic inline operator fun LongArray.component5(): Long {\n return`

`get(4)` Returns 5th element from the array. If the size of this array is less than 5, throws an `IndexOutOfBoundsException` except in Kotlin/JS where the behavior is unspecified.
   
`@kotlin.internal.InlineOnly` public inline operator fun `FloatArray.component5(): Float` Returns 5th element from the array. If the size of this array is less than 5, throws an `IndexOutOfBoundsException` except in Kotlin/JS where the behavior is unspecified.
   
`@kotlin.internal.InlineOnly` public inline operator fun `DoubleArray.component5(): Double` Returns 5th element from the array. If the size of this array is less than 5, throws an `IndexOutOfBoundsException` except in Kotlin/JS where the behavior is unspecified.
   
`@kotlin.internal.InlineOnly` public inline operator fun `BooleanArray.component5(): Boolean` Returns 5th element from the array. If the size of this array is less than 5, throws an `IndexOutOfBoundsException` except in Kotlin/JS where the behavior is unspecified.
   
`@kotlin.internal.InlineOnly` public inline operator fun `CharArray.component5(): Char` Returns true if [element] is found in the array.
   
`@kotlin.internal.OnlyInputTypes T` public operator fun `Array<out T>.contains(element: T): Boolean` Returns true if [element] is found in the array.
   
`ByteArray.contains(element: Byte): Boolean` Returns true if [element] is found in the array.
   
`ShortArray.contains(element: Short): Boolean` Returns true if [element] is found in the array.
   
`IntArray.contains(element: Int): Boolean` Returns true if [element] is found in the array.
   
`LongArray.contains(element: Long): Boolean` Returns true if [element] is found in the array.
   
`FloatArray.contains(element: Float): Boolean` Returns true if [element] is found in the array.
   
`DoubleArray.contains(element: Double): Boolean` Returns true if [element] is found in the array.
   
`BooleanArray.contains(element: Boolean): Boolean` Returns true if [element] is found in the array.
   
`CharArray.contains(element: Char): Boolean` Returns an element at the given [index] or throws an `IndexOutOfBoundsException` if the [index] is out of bounds of this array.
   
`@sample`
  
`samples.collections.Collections.Elements.elementAt` public expect fun `<T> Array<out T>.elementAt(index: Int): T` Returns an element at the given [index] or throws an `IndexOutOfBoundsException` if the [index] is out of bounds of this array.
   
`@sample`
  
`samples.collections.Collections.Elements.elementAt` public expect fun `ByteArray.elementAt(index: Int): Byte` Returns an element at the given [index] or throws an `IndexOutOfBoundsException` if the [index] is out of bounds of this array.
   
`@sample`
  
`samples.collections.Collections.Elements.elementAt` public expect fun `ShortArray.elementAt(index: Int): Short` Returns an element at the given [index] or throws an `IndexOutOfBoundsException` if the [index] is out of bounds of this array.
   
`@sample`
  
`samples.collections.Collections.Elements.elementAt` public expect fun `IntArray.elementAt(index: Int): Int` Returns an element at the given [index] or throws an `IndexOutOfBoundsException` if the [index] is out of bounds of this array.
   
`@sample`
  
`samples.collections.Collections.Elements.elementAt` public expect fun `LongArray.elementAt(index: Int): Long` Returns an element at the given [index] or throws an `IndexOutOfBoundsException` if the [index] is out of bounds of this array.
   
`@sample`
  
`samples.collections.Collections.Elements.elementAt` public expect fun `FloatArray.elementAt(index: Int): Float` Returns an element at the given [index] or throws an `IndexOutOfBoundsException` if the [index] is out of bounds of this array.
   
`@sample`
  
`samples.collections.Collections.Elements.elementAt` public expect fun `DoubleArray.elementAt(index: Int): Double` Returns an element at the given [index] or throws an `IndexOutOfBoundsException` if the [index] is out of bounds of this array.
   
`@sample`
  
`samples.collections.Collections.Elements.elementAt` public expect fun `BooleanArray.elementAt(index: Int): Boolean` Returns an element at the given [index] or throws an `IndexOutOfBoundsException` if the [index] is out of bounds of this array.
   
`@sample`

```

samples.collections.Collections.Elements.elementAt\n */\npublic expect fun CharArray.elementAt(index: Int):
Char\n\n/**\n * Returns an element at the given [index] or the result of calling the [defaultValue] function if the
[index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrElse\n */\n@kotlin.internal.InlineOnly\npublic inline fun
<T> Array<out T>.elementAtOrElse(index: Int, defaultValue: (Int) -> T): T {\n    return if (index >= 0 && index <=
lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or the result of
calling the [defaultValue] function if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrElse\n */\n@kotlin.internal.InlineOnly\npublic inline fun
ByteArray.elementAtOrElse(index: Int, defaultValue: (Int) -> Byte): Byte {\n    return if (index >= 0 && index <=
lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or the result of
calling the [defaultValue] function if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrElse\n */\n@kotlin.internal.InlineOnly\npublic inline fun
ShortArray.elementAtOrElse(index: Int, defaultValue: (Int) -> Short): Short {\n    return if (index >= 0 && index <=
lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or the result of
calling the [defaultValue] function if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrElse\n */\n@kotlin.internal.InlineOnly\npublic inline fun
IntArray.elementAtOrElse(index: Int, defaultValue: (Int) -> Int): Int {\n    return if (index >= 0 && index <=
lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or the result of
calling the [defaultValue] function if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrElse\n */\n@kotlin.internal.InlineOnly\npublic inline fun
LongArray.elementAtOrElse(index: Int, defaultValue: (Int) -> Long): Long {\n    return if (index >= 0 && index <=
lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or the result of
calling the [defaultValue] function if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrElse\n */\n@kotlin.internal.InlineOnly\npublic inline fun
FloatArray.elementAtOrElse(index: Int, defaultValue: (Int) -> Float): Float {\n    return if (index >= 0 && index <=
lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or the result of
calling the [defaultValue] function if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrElse\n */\n@kotlin.internal.InlineOnly\npublic inline fun
DoubleArray.elementAtOrElse(index: Int, defaultValue: (Int) -> Double): Double {\n    return if (index >= 0 &&
index <= lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or the
result of calling the [defaultValue] function if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrElse\n */\n@kotlin.internal.InlineOnly\npublic inline fun
BooleanArray.elementAtOrElse(index: Int, defaultValue: (Int) -> Boolean): Boolean {\n    return if (index >= 0 &&
index <= lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or the
result of calling the [defaultValue] function if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrElse\n */\n@kotlin.internal.InlineOnly\npublic inline fun
CharArray.elementAtOrElse(index: Int, defaultValue: (Int) -> Char): Char {\n    return if (index >= 0 && index <=
lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or `null` if the
[index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrNull\n */\n@kotlin.internal.InlineOnly\npublic inline fun
<T> Array<out T>.elementAtOrNull(index: Int): T? {\n    return this.getOrNull(index)\n}\n\n/**\n * Returns an
element at the given [index] or `null` if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrNull\n */\n@kotlin.internal.InlineOnly\npublic inline fun
ByteArray.elementAtOrNull(index: Int): Byte? {\n    return this.getOrNull(index)\n}\n\n/**\n * Returns an element
at the given [index] or `null` if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrNull\n */\n@kotlin.internal.InlineOnly\npublic inline fun
ShortArray.elementAtOrNull(index: Int): Short? {\n    return this.getOrNull(index)\n}\n\n/**\n * Returns an element
at the given [index] or `null` if the [index] is out of bounds of this array.\n * \n * @sample

```

```

samples.collections.Collections.Elements.elementAtOrNull\n *^@kotlin.internal.InlineOnly\npublic inline fun
IntArray.elementAtOrNull(index: Int): Int? {\n  return this.getOrNull(index)\n}\n\n/**\n * Returns an element at
the given [index] or `null` if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrNull\n *^@kotlin.internal.InlineOnly\npublic inline fun
LongArray.elementAtOrNull(index: Int): Long? {\n  return this.getOrNull(index)\n}\n\n/**\n * Returns an element
at the given [index] or `null` if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrNull\n *^@kotlin.internal.InlineOnly\npublic inline fun
FloatArray.elementAtOrNull(index: Int): Float? {\n  return this.getOrNull(index)\n}\n\n/**\n * Returns an element
at the given [index] or `null` if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrNull\n *^@kotlin.internal.InlineOnly\npublic inline fun
DoubleArray.elementAtOrNull(index: Int): Double? {\n  return this.getOrNull(index)\n}\n\n/**\n * Returns an
element at the given [index] or `null` if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrNull\n *^@kotlin.internal.InlineOnly\npublic inline fun
BooleanArray.elementAtOrNull(index: Int): Boolean? {\n  return this.getOrNull(index)\n}\n\n/**\n * Returns an
element at the given [index] or `null` if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrNull\n *^@kotlin.internal.InlineOnly\npublic inline fun
CharArray.elementAtOrNull(index: Int): Char? {\n  return this.getOrNull(index)\n}\n\n/**\n * Returns the first
element matching the given [predicate], or `null` if no such element was found.\n
*^@kotlin.internal.InlineOnly\npublic inline fun <T> Array<out T>.find(predicate: (T) -> Boolean): T? {\n
return firstOrNull(predicate)\n}\n\n/**\n * Returns the first element matching the given [predicate], or `null` if no
such element was found.\n
*^@kotlin.internal.InlineOnly\npublic inline fun ByteArray.find(predicate: (Byte) ->
Boolean): Byte? {\n  return firstOrNull(predicate)\n}\n\n/**\n * Returns the first element matching the given
[predicate], or `null` if no such element was found.\n
*^@kotlin.internal.InlineOnly\npublic inline fun
ShortArray.find(predicate: (Short) -> Boolean): Short? {\n  return firstOrNull(predicate)\n}\n\n/**\n * Returns the
first element matching the given [predicate], or `null` if no such element was found.\n
*^@kotlin.internal.InlineOnly\npublic inline fun IntArray.find(predicate: (Int) -> Boolean): Int? {\n  return
firstOrNull(predicate)\n}\n\n/**\n * Returns the first element matching the given [predicate], or `null` if no such
element was found.\n
*^@kotlin.internal.InlineOnly\npublic inline fun LongArray.find(predicate: (Long) ->
Boolean): Long? {\n  return firstOrNull(predicate)\n}\n\n/**\n * Returns the first element matching the given
[predicate], or `null` if no such element was found.\n
*^@kotlin.internal.InlineOnly\npublic inline fun
FloatArray.find(predicate: (Float) -> Boolean): Float? {\n  return firstOrNull(predicate)\n}\n\n/**\n * Returns the
first element matching the given [predicate], or `null` if no such element was found.\n
*^@kotlin.internal.InlineOnly\npublic inline fun DoubleArray.find(predicate: (Double) -> Boolean): Double? {\n
return firstOrNull(predicate)\n}\n\n/**\n * Returns the first element matching the given [predicate], or `null` if no
such element was found.\n
*^@kotlin.internal.InlineOnly\npublic inline fun BooleanArray.find(predicate:
(Boolean) -> Boolean): Boolean? {\n  return firstOrNull(predicate)\n}\n\n/**\n * Returns the first element
matching the given [predicate], or `null` if no such element was found.\n
*^@kotlin.internal.InlineOnly\npublic inline fun
CharArray.find(predicate: (Char) -> Boolean): Char? {\n  return firstOrNull(predicate)\n}\n\n/**\n * Returns the
last element matching the given [predicate], or `null` if no such element was found.\n
*^@kotlin.internal.InlineOnly\npublic inline fun <T> Array<out T>.findLast(predicate: (T) -> Boolean): T? {\n
return lastOrNull(predicate)\n}\n\n/**\n * Returns the last element matching the given [predicate], or `null` if no
such element was found.\n
*^@kotlin.internal.InlineOnly\npublic inline fun ByteArray.findLast(predicate: (Byte) -
> Boolean): Byte? {\n  return lastOrNull(predicate)\n}\n\n/**\n * Returns the last element matching the given
[predicate], or `null` if no such element was found.\n
*^@kotlin.internal.InlineOnly\npublic inline fun
ShortArray.findLast(predicate: (Short) -> Boolean): Short? {\n  return lastOrNull(predicate)\n}\n\n/**\n * Returns
the last element matching the given [predicate], or `null` if no such element was found.\n
*^@kotlin.internal.InlineOnly\npublic inline fun IntArray.findLast(predicate: (Int) -> Boolean): Int? {\n  return
lastOrNull(predicate)\n}\n\n/**\n * Returns the last element matching the given [predicate], or `null` if no such

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element was found.\n */\n@kotlin.internal.InlineOnly\npublic inline fun LongArray.findLast(predicate: (Long) ->
Boolean): Long? {\n    return lastOrNull(predicate)\n}\n\n/**\n * Returns the last element matching the given
[predicate], or `null` if no such element was found.\n */\n@kotlin.internal.InlineOnly\npublic inline fun
FloatArray.findLast(predicate: (Float) -> Boolean): Float? {\n    return lastOrNull(predicate)\n}\n\n/**\n * Returns
the last element matching the given [predicate], or `null` if no such element was found.\n
*/\n@kotlin.internal.InlineOnly\npublic inline fun DoubleArray.findLast(predicate: (Double) -> Boolean): Double?
{\n    return lastOrNull(predicate)\n}\n\n/**\n * Returns the last element matching the given [predicate], or `null` if
no such element was found.\n */\n@kotlin.internal.InlineOnly\npublic inline fun BooleanArray.findLast(predicate:
(Boolean) -> Boolean): Boolean? {\n    return lastOrNull(predicate)\n}\n\n/**\n * Returns the last element matching
the given [predicate], or `null` if no such element was found.\n */\n@kotlin.internal.InlineOnly\npublic inline fun
CharArray.findLast(predicate: (Char) -> Boolean): Char? {\n    return lastOrNull(predicate)\n}\n\n/**\n * Returns
first element.\n * @throws [NoSuchElementException] if the array is empty.\n */\npublic fun <T> Array<out
T>.first(): T {\n    if (isEmpty())\n        throw NoSuchElementException("Array is empty.")\n    return
this[0]\n}\n\n/**\n * Returns first element.\n * @throws [NoSuchElementException] if the array is empty.\n
*/\npublic fun ByteArray.first(): Byte {\n    if (isEmpty())\n        throw NoSuchElementException("Array is
empty.")\n    return this[0]\n}\n\n/**\n * Returns first element.\n * @throws [NoSuchElementException] if the
array is empty.\n */\npublic fun ShortArray.first(): Short {\n    if (isEmpty())\n        throw
NoSuchElementException("Array is empty.")\n    return this[0]\n}\n\n/**\n * Returns first element.\n * @throws
[NoSuchElementException] if the array is empty.\n */\npublic fun IntArray.first(): Int {\n    if (isEmpty())\n
throw NoSuchElementException("Array is empty.")\n    return this[0]\n}\n\n/**\n * Returns first element.\n *
@throws [NoSuchElementException] if the array is empty.\n */\npublic fun LongArray.first(): Long {\n    if
(isEmpty())\n        throw NoSuchElementException("Array is empty.")\n    return this[0]\n}\n\n/**\n * Returns first
element.\n * @throws [NoSuchElementException] if the array is empty.\n */\npublic fun FloatArray.first(): Float
{\n    if (isEmpty())\n        throw NoSuchElementException("Array is empty.")\n    return this[0]\n}\n\n/**\n *
Returns first element.\n * @throws [NoSuchElementException] if the array is empty.\n */\npublic fun
DoubleArray.first(): Double {\n    if (isEmpty())\n        throw NoSuchElementException("Array is empty.")\n
return this[0]\n}\n\n/**\n * Returns first element.\n * @throws [NoSuchElementException] if the array is empty.\n
*/\npublic fun BooleanArray.first(): Boolean {\n    if (isEmpty())\n        throw NoSuchElementException("Array is
empty.")\n    return this[0]\n}\n\n/**\n * Returns first element.\n * @throws [NoSuchElementException] if the
array is empty.\n */\npublic fun CharArray.first(): Char {\n    if (isEmpty())\n        throw
NoSuchElementException("Array is empty.")\n    return this[0]\n}\n\n/**\n * Returns the first element matching
the given [predicate].\n * @throws [NoSuchElementException] if no such element is found.\n */\npublic inline fun
<T> Array<out T>.first(predicate: (T) -> Boolean): T {\n    for (element in this) if (predicate(element)) return
element\n    throw NoSuchElementException("Array contains no element matching the predicate.")\n}\n\n/**\n *
Returns the first element matching the given [predicate].\n * @throws [NoSuchElementException] if no such
element is found.\n */\npublic inline fun ByteArray.first(predicate: (Byte) -> Boolean): Byte {\n    for (element in
this) if (predicate(element)) return element\n    throw NoSuchElementException("Array contains no element
matching the predicate.")\n}\n\n/**\n * Returns the first element matching the given [predicate].\n * @throws
[NoSuchElementException] if no such element is found.\n */\npublic inline fun ShortArray.first(predicate: (Short) -
> Boolean): Short {\n    for (element in this) if (predicate(element)) return element\n    throw
NoSuchElementException("Array contains no element matching the predicate.")\n}\n\n/**\n * Returns the first
element matching the given [predicate].\n * @throws [NoSuchElementException] if no such element is found.\n
*/\npublic inline fun IntArray.first(predicate: (Int) -> Boolean): Int {\n    for (element in this) if (predicate(element))
return element\n    throw NoSuchElementException("Array contains no element matching the
predicate.")\n}\n\n/**\n * Returns the first element matching the given [predicate].\n * @throws
[NoSuchElementException] if no such element is found.\n */\npublic inline fun LongArray.first(predicate: (Long) -
> Boolean): Long {\n    for (element in this) if (predicate(element)) return element\n    throw
NoSuchElementException("Array contains no element matching the predicate.")\n}\n\n/**\n * Returns the first

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element matching the given [predicate].\n * @throws [NoSuchElementException] if no such element is found.\n
*\npublic inline fun FloatArray.first(predicate: (Float) -> Boolean): Float {\n  for (element in this) if
(predicate(element)) return element\n  throw NoSuchElementException("Array contains no element matching the
predicate.")\n}\n\n/**\n * Returns the first element matching the given [predicate].\n * @throws
[NoSuchElementException] if no such element is found.\n * \npublic inline fun DoubleArray.first(predicate:
(Double) -> Boolean): Double {\n  for (element in this) if (predicate(element)) return element\n  throw
NoSuchElementException("Array contains no element matching the predicate.")\n}\n\n/**\n * Returns the first
element matching the given [predicate].\n * @throws [NoSuchElementException] if no such element is found.\n
*\npublic inline fun BooleanArray.first(predicate: (Boolean) -> Boolean): Boolean {\n  for (element in this) if
(predicate(element)) return element\n  throw NoSuchElementException("Array contains no element matching the
predicate.")\n}\n\n/**\n * Returns the first element matching the given [predicate].\n * @throws
[NoSuchElementException] if no such element is found.\n * \npublic inline fun CharArray.first(predicate: (Char) ->
Boolean): Char {\n  for (element in this) if (predicate(element)) return element\n  throw
NoSuchElementException("Array contains no element matching the predicate.")\n}\n\n/**\n * Returns the first
element, or `null` if the array is empty.\n * \npublic fun <T> Array<out T>.firstOrNull(): T? {\n  return if
(isEmpty()) null else this[0]\n}\n\n/**\n * Returns the first element, or `null` if the array is empty.\n * \npublic fun
ByteArray.firstOrNull(): Byte? {\n  return if (isEmpty()) null else this[0]\n}\n\n/**\n * Returns the first element, or
`null` if the array is empty.\n * \npublic fun ShortArray.firstOrNull(): Short? {\n  return if (isEmpty()) null else
this[0]\n}\n\n/**\n * Returns the first element, or `null` if the array is empty.\n * \npublic fun IntArray.firstOrNull():
Int? {\n  return if (isEmpty()) null else this[0]\n}\n\n/**\n * Returns the first element, or `null` if the array is
empty.\n * \npublic fun LongArray.firstOrNull(): Long? {\n  return if (isEmpty()) null else this[0]\n}\n\n/**\n *
Returns the first element, or `null` if the array is empty.\n * \npublic fun FloatArray.firstOrNull(): Float? {\n
return if (isEmpty()) null else this[0]\n}\n\n/**\n * Returns the first element, or `null` if the array is empty.\n
*\npublic fun DoubleArray.firstOrNull(): Double? {\n  return if (isEmpty()) null else this[0]\n}\n\n/**\n * Returns
the first element, or `null` if the array is empty.\n * \npublic fun BooleanArray.firstOrNull(): Boolean? {\n  return
if (isEmpty()) null else this[0]\n}\n\n/**\n * Returns the first element, or `null` if the array is empty.\n * \npublic fun
CharArray.firstOrNull(): Char? {\n  return if (isEmpty()) null else this[0]\n}\n\n/**\n * Returns the first element
matching the given [predicate], or `null` if element was not found.\n * \npublic inline fun <T> Array<out
T>.firstOrNull(predicate: (T) -> Boolean): T? {\n  for (element in this) if (predicate(element)) return element\n
return null\n}\n\n/**\n * Returns the first element matching the given [predicate], or `null` if element was not
found.\n * \npublic inline fun ByteArray.firstOrNull(predicate: (Byte) -> Boolean): Byte? {\n  for (element in this)
if (predicate(element)) return element\n  return null\n}\n\n/**\n * Returns the first element matching the given
[predicate], or `null` if element was not found.\n * \npublic inline fun ShortArray.firstOrNull(predicate: (Short) ->
Boolean): Short? {\n  for (element in this) if (predicate(element)) return element\n  return null\n}\n\n/**\n *
Returns the first element matching the given [predicate], or `null` if element was not found.\n * \npublic inline fun
IntArray.firstOrNull(predicate: (Int) -> Boolean): Int? {\n  for (element in this) if (predicate(element)) return
element\n  return null\n}\n\n/**\n * Returns the first element matching the given [predicate], or `null` if element
was not found.\n * \npublic inline fun LongArray.firstOrNull(predicate: (Long) -> Boolean): Long? {\n  for
(element in this) if (predicate(element)) return element\n  return null\n}\n\n/**\n * Returns the first element
matching the given [predicate], or `null` if element was not found.\n * \npublic inline fun
FloatArray.firstOrNull(predicate: (Float) -> Boolean): Float? {\n  for (element in this) if (predicate(element))
return element\n  return null\n}\n\n/**\n * Returns the first element matching the given [predicate], or `null` if
element was not found.\n * \npublic inline fun DoubleArray.firstOrNull(predicate: (Double) -> Boolean): Double?
{\n  for (element in this) if (predicate(element)) return element\n  return null\n}\n\n/**\n * Returns the first
element matching the given [predicate], or `null` if element was not found.\n * \npublic inline fun
BooleanArray.firstOrNull(predicate: (Boolean) -> Boolean): Boolean? {\n  for (element in this) if
(predicate(element)) return element\n  return null\n}\n\n/**\n * Returns the first element matching the given
[predicate], or `null` if element was not found.\n * \npublic inline fun CharArray.firstOrNull(predicate: (Char) ->

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Boolean): Char? {\n  for (element in this) if (predicate(element)) return element\n  return null\n}\n\n/**\n *
Returns an element at the given [index] or the result of calling the [defaultValue] function if the [index] is out of
bounds of this array.\n */\n@kotlin.internal.InlineOnly\npublic inline fun <T> Array<out T>.getOrNull(index: Int,
defaultValue: (Int) -> T): T {\n  return if (index >= 0 && index <= lastIndex) get(index) else
defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or the result of calling the [defaultValue]
function if the [index] is out of bounds of this array.\n */\n@kotlin.internal.InlineOnly\npublic inline fun
ByteArray.getOrNull(index: Int, defaultValue: (Int) -> Byte): Byte {\n  return if (index >= 0 && index <=
lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or the result of
calling the [defaultValue] function if the [index] is out of bounds of this array.\n
*/\n@kotlin.internal.InlineOnly\npublic inline fun ShortArray.getOrNull(index: Int, defaultValue: (Int) -> Short):
Short {\n  return if (index >= 0 && index <= lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns
an element at the given [index] or the result of calling the [defaultValue] function if the [index] is out of bounds of
this array.\n */\n@kotlin.internal.InlineOnly\npublic inline fun IntArray.getOrNull(index: Int, defaultValue: (Int) ->
Int): Int {\n  return if (index >= 0 && index <= lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n *
Returns an element at the given [index] or the result of calling the [defaultValue] function if the [index] is out of
bounds of this array.\n */\n@kotlin.internal.InlineOnly\npublic inline fun LongArray.getOrNull(index: Int,
defaultValue: (Int) -> Long): Long {\n  return if (index >= 0 && index <= lastIndex) get(index) else
defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or the result of calling the [defaultValue]
function if the [index] is out of bounds of this array.\n */\n@kotlin.internal.InlineOnly\npublic inline fun
FloatArray.getOrNull(index: Int, defaultValue: (Int) -> Float): Float {\n  return if (index >= 0 && index <=
lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or the result of
calling the [defaultValue] function if the [index] is out of bounds of this array.\n
*/\n@kotlin.internal.InlineOnly\npublic inline fun DoubleArray.getOrNull(index: Int, defaultValue: (Int) ->
Double): Double {\n  return if (index >= 0 && index <= lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n
* Returns an element at the given [index] or the result of calling the [defaultValue] function if the [index] is out of
bounds of this array.\n */\n@kotlin.internal.InlineOnly\npublic inline fun BooleanArray.getOrNull(index: Int,
defaultValue: (Int) -> Boolean): Boolean {\n  return if (index >= 0 && index <= lastIndex) get(index) else
defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or the result of calling the [defaultValue]
function if the [index] is out of bounds of this array.\n */\n@kotlin.internal.InlineOnly\npublic inline fun
CharArray.getOrNull(index: Int, defaultValue: (Int) -> Char): Char {\n  return if (index >= 0 && index <=
lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or `null` if the
[index] is out of bounds of this array.\n */\npublic fun <T> Array<out T>.getOrNull(index: Int): T? {\n  return if
(index >= 0 && index <= lastIndex) get(index) else null\n}\n\n/**\n * Returns an element at the given [index] or
`null` if the [index] is out of bounds of this array.\n */\npublic fun ByteArray.getOrNull(index: Int): Byte? {\n
return if (index >= 0 && index <= lastIndex) get(index) else null\n}\n\n/**\n * Returns an element at the given
[index] or `null` if the [index] is out of bounds of this array.\n */\npublic fun ShortArray.getOrNull(index: Int):
Short? {\n  return if (index >= 0 && index <= lastIndex) get(index) else null\n}\n\n/**\n * Returns an element at
the given [index] or `null` if the [index] is out of bounds of this array.\n */\npublic fun IntArray.getOrNull(index:
Int): Int? {\n  return if (index >= 0 && index <= lastIndex) get(index) else null\n}\n\n/**\n * Returns an element
at the given [index] or `null` if the [index] is out of bounds of this array.\n */\npublic fun LongArray.getOrNull(index:
Int): Long? {\n  return if (index >= 0 && index <= lastIndex) get(index) else null\n}\n\n/**\n * Returns an element
at the given [index] or `null` if the [index] is out of bounds of this array.\n */\npublic fun
FloatArray.getOrNull(index: Int): Float? {\n  return if (index >= 0 && index <= lastIndex) get(index) else
null\n}\n\n/**\n * Returns an element at the given [index] or `null` if the [index] is out of bounds of this array.\n
*/\npublic fun DoubleArray.getOrNull(index: Int): Double? {\n  return if (index >= 0 && index <= lastIndex)
get(index) else null\n}\n\n/**\n * Returns an element at the given [index] or `null` if the [index] is out of bounds
of this array.\n */\npublic fun BooleanArray.getOrNull(index: Int): Boolean? {\n  return if (index >= 0 && index <=
lastIndex) get(index) else null\n}\n\n/**\n * Returns an element at the given [index] or `null` if the [index] is out
of

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bounds of this array.\n */\npublic fun CharArray.getOrNull(index: Int): Char? {\n    return if (index >= 0 && index
<= lastIndex) get(index) else null\n}\n\n/**\n * Returns first index of [element], or -1 if the array does not contain
element.\n */\npublic fun <@kotlin.internal.OnlyInputTypes T> Array<out T>.indexOf(element: T): Int {\n    if
(element == null) {\n        for (index in indices) {\n            if (this[index] == null) {\n                return index\n
            }\n        }\n    } else {\n        for (index in indices) {\n            if (element == this[index]) {\n                return index\n
            }\n        }\n    }\n    return -1\n}\n\n/**\n * Returns first index of [element], or -1 if the array does not contain
element.\n */\npublic fun ByteArray.indexOf(element: Byte): Int {\n    for (index in indices) {\n        if (element ==
this[index]) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns first index of [element], or -1 if
the array does not contain element.\n */\npublic fun ShortArray.indexOf(element: Short): Int {\n    for (index in
indices) {\n        if (element == this[index]) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns
first index of [element], or -1 if the array does not contain element.\n */\npublic fun IntArray.indexOf(element: Int):
Int {\n    for (index in indices) {\n        if (element == this[index]) {\n            return index\n        }\n    }\n    return -
1\n}\n\n/**\n * Returns first index of [element], or -1 if the array does not contain element.\n */\npublic fun
LongArray.indexOf(element: Long): Int {\n    for (index in indices) {\n        if (element == this[index]) {\n            return
index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns first index of [element], or -1 if the array does not
contain element.\n */\npublic fun FloatArray.indexOf(element: Float): Int {\n    for (index in indices) {\n        if
(element == this[index]) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns first index of
[element], or -1 if the array does not contain element.\n */\npublic fun DoubleArray.indexOf(element: Double): Int
{\n    for (index in indices) {\n        if (element == this[index]) {\n            return index\n        }\n    }\n    return -
1\n}\n\n/**\n * Returns first index of [element], or -1 if the array does not contain element.\n */\npublic fun
BooleanArray.indexOf(element: Boolean): Int {\n    for (index in indices) {\n        if (element == this[index]) {\n           
return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns first index of [element], or -1 if the array does not
contain element.\n */\npublic fun CharArray.indexOf(element: Char): Int {\n    for (index in indices) {\n        if
(element == this[index]) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the first
element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun <T>
Array<out T>.indexOfFirst(predicate: (T) -> Boolean): Int {\n    for (index in indices) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the first
element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun
ByteArray.indexOfFirst(predicate: (Byte) -> Boolean): Int {\n    for (index in indices) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the first
element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun
ShortArray.indexOfFirst(predicate: (Short) -> Boolean): Int {\n    for (index in indices) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the first
element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun
IntArray.indexOfFirst(predicate: (Int) -> Boolean): Int {\n    for (index in indices) {\n        if (predicate(this[index]))
{\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the first element matching the
given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun
LongArray.indexOfFirst(predicate: (Long) -> Boolean): Int {\n    for (index in indices) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the first
element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun
FloatArray.indexOfFirst(predicate: (Float) -> Boolean): Int {\n    for (index in indices) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the first
element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun
DoubleArray.indexOfFirst(predicate: (Double) -> Boolean): Int {\n    for (index in indices) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the first
element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun
BooleanArray.indexOfFirst(predicate: (Boolean) -> Boolean): Int {\n    for (index in indices) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the first

```



```

element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun
CharArray.indexOfFirst(predicate: (Char) -> Boolean): Int {\n    for (index in indices) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the last
element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun <T>
Array<out T>.indexOfLast(predicate: (T) -> Boolean): Int {\n    for (index in indices.reversed()) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the last
element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun
ByteArray.indexOfLast(predicate: (Byte) -> Boolean): Int {\n    for (index in indices.reversed()) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the last
element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun
ShortArray.indexOfLast(predicate: (Short) -> Boolean): Int {\n    for (index in indices.reversed()) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the last
element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun
IntArray.indexOfLast(predicate: (Int) -> Boolean): Int {\n    for (index in indices.reversed()) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the last
element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun
LongArray.indexOfLast(predicate: (Long) -> Boolean): Int {\n    for (index in indices.reversed()) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the last
element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun
FloatArray.indexOfLast(predicate: (Float) -> Boolean): Int {\n    for (index in indices.reversed()) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the last
element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun
DoubleArray.indexOfLast(predicate: (Double) -> Boolean): Int {\n    for (index in indices.reversed()) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the last
element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun
BooleanArray.indexOfLast(predicate: (Boolean) -> Boolean): Int {\n    for (index in indices.reversed()) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns index of the last
element matching the given [predicate], or -1 if the array does not contain such element.\n */\npublic inline fun
CharArray.indexOfLast(predicate: (Char) -> Boolean): Int {\n    for (index in indices.reversed()) {\n        if
(predicate(this[index])) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns the last element.\n *
@throws [NoSuchElementException] if the array is empty.\n */\npublic fun <T> Array<out T>.last(): T {\n    if
(isEmpty())\n        throw NoSuchElementException("Array is empty.")\n    return this[lastIndex]\n}\n\n/**\n *
Returns the last element.\n * @throws [NoSuchElementException] if the array is empty.\n */\npublic fun
ByteArray.last(): Byte {\n    if (isEmpty())\n        throw NoSuchElementException("Array is empty.")\n    return
this[lastIndex]\n}\n\n/**\n * Returns the last element.\n * @throws [NoSuchElementException] if the array is
empty.\n */\npublic fun ShortArray.last(): Short {\n    if (isEmpty())\n        throw NoSuchElementException("Array
is empty.")\n    return this[lastIndex]\n}\n\n/**\n * Returns the last element.\n * @throws
[NoSuchElementException] if the array is empty.\n */\npublic fun IntArray.last(): Int {\n    if (isEmpty())\n        throw
NoSuchElementException("Array is empty.")\n    return this[lastIndex]\n}\n\n/**\n * Returns the last
element.\n * @throws [NoSuchElementException] if the array is empty.\n */\npublic fun LongArray.last(): Long {\n    if
(isEmpty())\n        throw NoSuchElementException("Array is empty.")\n    return this[lastIndex]\n}\n\n/**\n *
Returns the last element.\n * @throws [NoSuchElementException] if the array is empty.\n */\npublic fun
FloatArray.last(): Float {\n    if (isEmpty())\n        throw NoSuchElementException("Array is empty.")\n    return
this[lastIndex]\n}\n\n/**\n * Returns the last element.\n * @throws [NoSuchElementException] if the array is
empty.\n */\npublic fun DoubleArray.last(): Double {\n    if (isEmpty())\n        throw
NoSuchElementException("Array is empty.")\n    return this[lastIndex]\n}\n\n/**\n * Returns the last element.\n *
@throws [NoSuchElementException] if the array is empty.\n */\npublic fun BooleanArray.last(): Boolean {\n    if
(isEmpty())\n        throw NoSuchElementException("Array is empty.")\n    return this[lastIndex]\n}\n\n

```

```

Returns the last element.\n * @throws [NoSuchElementException] if the array is empty.\n */\npublic fun
CharArray.last(): Char {\n    if (isEmpty())\n        throw NoSuchElementException("Array is empty.")\n    return
this[lastIndex]}\n}\n\n/**\n * Returns the last element matching the given [predicate].\n * @throws
[NoSuchElementException] if no such element is found.\n */\npublic inline fun <T> Array<out T>.last(predicate:
(T) -> Boolean): T {\n    for (index in this.indices.reversed()) {\n        val element = this[index]\n        if
(predicate(element)) return element\n    }\n    throw NoSuchElementException("Array contains no element
matching the predicate.")}\n}\n\n/**\n * Returns the last element matching the given [predicate].\n * @throws
[NoSuchElementException] if no such element is found.\n */\npublic inline fun ByteArray.last(predicate: (Byte) ->
Boolean): Byte {\n    for (index in this.indices.reversed()) {\n        val element = this[index]\n        if
(predicate(element)) return element\n    }\n    throw NoSuchElementException("Array contains no element
matching the predicate.")}\n}\n\n/**\n * Returns the last element matching the given [predicate].\n * @throws
[NoSuchElementException] if no such element is found.\n */\npublic inline fun ShortArray.last(predicate: (Short) ->
Boolean): Short {\n    for (index in this.indices.reversed()) {\n        val element = this[index]\n        if
(predicate(element)) return element\n    }\n    throw NoSuchElementException("Array contains no element
matching the predicate.")}\n}\n\n/**\n * Returns the last element matching the given [predicate].\n * @throws
[NoSuchElementException] if no such element is found.\n */\npublic inline fun IntArray.last(predicate: (Int) ->
Boolean): Int {\n    for (index in this.indices.reversed()) {\n        val element = this[index]\n        if
(predicate(element)) return element\n    }\n    throw NoSuchElementException("Array contains no element
matching the predicate.")}\n}\n\n/**\n * Returns the last element matching the given [predicate].\n * @throws
[NoSuchElementException] if no such element is found.\n */\npublic inline fun LongArray.last(predicate: (Long) ->
Boolean): Long {\n    for (index in this.indices.reversed()) {\n        val element = this[index]\n        if
(predicate(element)) return element\n    }\n    throw NoSuchElementException("Array contains no element
matching the predicate.")}\n}\n\n/**\n * Returns the last element matching the given [predicate].\n * @throws
[NoSuchElementException] if no such element is found.\n */\npublic inline fun FloatArray.last(predicate: (Float) ->
Boolean): Float {\n    for (index in this.indices.reversed()) {\n        val element = this[index]\n        if
(predicate(element)) return element\n    }\n    throw NoSuchElementException("Array contains no element
matching the predicate.")}\n}\n\n/**\n * Returns the last element matching the given [predicate].\n * @throws
[NoSuchElementException] if no such element is found.\n */\npublic inline fun DoubleArray.last(predicate:
(Double) -> Boolean): Double {\n    for (index in this.indices.reversed()) {\n        val element = this[index]\n        if
(predicate(element)) return element\n    }\n    throw NoSuchElementException("Array contains no element
matching the predicate.")}\n}\n\n/**\n * Returns the last element matching the given [predicate].\n * @throws
[NoSuchElementException] if no such element is found.\n */\npublic inline fun BooleanArray.last(predicate:
(Boolean) -> Boolean): Boolean {\n    for (index in this.indices.reversed()) {\n        val element = this[index]\n        if
(predicate(element)) return element\n    }\n    throw NoSuchElementException("Array contains no element
matching the predicate.")}\n}\n\n/**\n * Returns the last element matching the given [predicate].\n * @throws
[NoSuchElementException] if no such element is found.\n */\npublic inline fun CharArray.last(predicate: (Char) ->
Boolean): Char {\n    for (index in this.indices.reversed()) {\n        val element = this[index]\n        if
(predicate(element)) return element\n    }\n    throw NoSuchElementException("Array contains no element
matching the predicate.")}\n}\n\n/**\n * Returns last index of [element], or -1 if the array does not contain
element.\n */\npublic fun <@kotlin.internal.OnlyInputTypes T> Array<out T>.lastIndexOf(element: T): Int {\n    if
(element == null) {\n        for (index in indices.reversed()) {\n            if (this[index] == null) {\n                return
index\n            }\n        }\n    } else {\n        for (index in indices.reversed()) {\n            if (element == this[index]) {\n
                return index\n            }\n        }\n    }\n    return -1\n}\n\n/**\n * Returns last index of [element], or -1 if the
array does not contain element.\n */\npublic fun ByteArray.lastIndexOf(element: Byte): Int {\n    for (index in
indices.reversed()) {\n        if (element == this[index]) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns last index of [element], or -1 if the array does not contain element.\n */\npublic fun
ShortArray.lastIndexOf(element: Short): Int {\n    for (index in indices.reversed()) {\n        if (element ==
this[index]) {\n            return index\n        }\n    }\n    return -1\n}\n\n/**\n * Returns last index of [element], or -1 if

```

the array does not contain element.

```

public fun IntArray.lastIndexOf(element: Int): Int {
    for (index in indices.reversed()) {
        if (element == this[index]) {
            return index
        }
    }
    return -1
}

```

\* Returns last index of [element], or -1 if the array does not contain element.

```

public fun LongArray.lastIndexOf(element: Long): Int {
    for (index in indices.reversed()) {
        if (element == this[index]) {
            return index
        }
    }
    return -1
}

```

\* Returns last index of [element], or -1 if the array does not contain element.

```

public fun FloatArray.lastIndexOf(element: Float): Int {
    for (index in indices.reversed()) {
        if (element == this[index]) {
            return index
        }
    }
    return -1
}

```

\* Returns last index of [element], or -1 if the array does not contain element.

```

public fun DoubleArray.lastIndexOf(element: Double): Int {
    for (index in indices.reversed()) {
        if (element == this[index]) {
            return index
        }
    }
    return -1
}

```

\* Returns last index of [element], or -1 if the array does not contain element.

```

public fun BooleanArray.lastIndexOf(element: Boolean): Int {
    for (index in indices.reversed()) {
        if (element == this[index]) {
            return index
        }
    }
    return -1
}

```

\* Returns last index of [element], or -1 if the array does not contain element.

```

public fun CharArray.lastIndexOf(element: Char): Int {
    for (index in indices.reversed()) {
        if (element == this[index]) {
            return index
        }
    }
    return -1
}

```

\* Returns the last element, or `null` if the array is empty.

```

public fun <T> Array<out T>.lastOrNull(): T? {
    return if (isEmpty()) null else this[size - 1]
}

```

\* Returns the last element, or `null` if the array is empty.

```

public fun ByteArray.lastOrNull(): Byte? {
    return if (isEmpty()) null else this[size - 1]
}

```

\* Returns the last element, or `null` if the array is empty.

```

public fun ShortArray.lastOrNull(): Short? {
    return if (isEmpty()) null else this[size - 1]
}

```

\* Returns the last element, or `null` if the array is empty.

```

public fun IntArray.lastOrNull(): Int? {
    return if (isEmpty()) null else this[size - 1]
}

```

\* Returns the last element, or `null` if the array is empty.

```

public fun LongArray.lastOrNull(): Long? {
    return if (isEmpty()) null else this[size - 1]
}

```

\* Returns the last element, or `null` if the array is empty.

```

public fun FloatArray.lastOrNull(): Float? {
    return if (isEmpty()) null else this[size - 1]
}

```

\* Returns the last element, or `null` if the array is empty.

```

public fun DoubleArray.lastOrNull(): Double? {
    return if (isEmpty()) null else this[size - 1]
}

```

\* Returns the last element, or `null` if the array is empty.

```

public fun BooleanArray.lastOrNull(): Boolean? {
    return if (isEmpty()) null else this[size - 1]
}

```

\* Returns the last element, or `null` if the array is empty.

```

public fun CharArray.lastOrNull(): Char? {
    return if (isEmpty()) null else this[size - 1]
}

```

\* Returns the last element matching the given [predicate], or `null` if no such element was found.

```

public inline fun <T> Array<out T>.lastOrNull(predicate: (T) -> Boolean): T? {
    for (index in this.indices.reversed()) {
        val element = this[index]
        if (predicate(element)) return element
    }
    return null
}

```

\* Returns the last element matching the given [predicate], or `null` if no such element was found.

```

public inline fun ByteArray.lastOrNull(predicate: (Byte) -> Boolean): Byte? {
    for (index in this.indices.reversed()) {
        val element = this[index]
        if (predicate(element)) return element
    }
    return null
}

```

\* Returns the last element matching the given [predicate], or `null` if no such element was found.

```

public inline fun ShortArray.lastOrNull(predicate: (Short) -> Boolean): Short? {
    for (index in this.indices.reversed()) {
        val element = this[index]
        if (predicate(element)) return element
    }
    return null
}

```

\* Returns the last element matching the given [predicate], or `null` if no such element was found.

```

public inline fun IntArray.lastOrNull(predicate: (Int) -> Boolean): Int? {
    for (index in this.indices.reversed()) {
        val element = this[index]
        if (predicate(element)) return element
    }
    return null
}

```

\* Returns the last element matching the given [predicate], or `null` if no such element was found.

```

public inline fun LongArray.lastOrNull(predicate: (Long) -> Boolean): Long? {
    for (index in this.indices.reversed()) {
        val element = this[index]
        if (predicate(element)) return element
    }
    return null
}

```

\* Returns the last element matching the given [predicate], or `null` if no such element was found.

```

public inline fun FloatArray.lastOrNull(predicate: (Float) -> Boolean): Float? {
    for (index in this.indices.reversed()) {
        val element = this[index]
        if (predicate(element)) return element
    }
    return null
}

```

\* Returns the last element matching the given [predicate], or `null` if no such element was found.

```

public inline fun DoubleArray.lastOrNull(predicate: (Double) -> Boolean): Double? {
    for (index in this.indices.reversed()) {

```

```

val element = this[index]\n    if (predicate(element)) return element\n    }\n    return null\n}\n\n/**\n * Returns the
last element matching the given [predicate], or `null` if no such element was found.\n */\npublic inline fun
BooleanArray.lastOrNull(predicate: (Boolean) -> Boolean): Boolean? {\n    for (index in this.indices.reversed()) {\n
        val element = this[index]\n            if (predicate(element)) return element\n        }\n        return null\n}\n\n/**\n * Returns
the last element matching the given [predicate], or `null` if no such element was found.\n */\npublic inline fun
CharArray.lastOrNull(predicate: (Char) -> Boolean): Char? {\n    for (index in this.indices.reversed()) {\n        val
element = this[index]\n            if (predicate(element)) return element\n        }\n        return null\n}\n\n/**\n * Returns a
random element from this array.\n * \n * @throws NoSuchElementException if this array is empty.\n */\n\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun <T> Array<out T>.random(): T {\n
return random(Random)\n}\n\n/**\n * Returns a random element from this array.\n * \n * @throws
NoSuchElementException if this array is empty.\n */\n\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun ByteArray.random(): Byte {\n
return random(Random)\n}\n\n/**\n * Returns a random element from
this array.\n * \n * @throws NoSuchElementException if this array is empty.\n */\n\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun ShortArray.random(): Short {\n
return random(Random)\n}\n\n/**\n * Returns a random element from this array.\n * \n * @throws
NoSuchElementException if this array is empty.\n */\n\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun IntArray.random(): Int {\n
return random(Random)\n}\n\n/**\n * Returns a random element from this
array.\n * \n * @throws NoSuchElementException if this array is empty.\n */\n\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun LongArray.random(): Long {\n
return random(Random)\n}\n\n/**\n * Returns a random element from this array.\n * \n * @throws
NoSuchElementException if this array is empty.\n */\n\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun FloatArray.random(): Float {\n
return random(Random)\n}\n\n/**\n * Returns a random element from
this array.\n * \n * @throws NoSuchElementException if this array is empty.\n */\n\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun DoubleArray.random(): Double {\n
return random(Random)\n}\n\n/**\n * Returns a random element from this array.\n * \n * @throws
NoSuchElementException if this array is empty.\n */\n\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun BooleanArray.random(): Boolean {\n
return random(Random)\n}\n\n/**\n * Returns a random element
from this array.\n * \n * @throws NoSuchElementException if this array is empty.\n */\n\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun CharArray.random(): Char {\n
return random(Random)\n}\n\n/**\n * Returns a random element from this array using the specified source of
randomness.\n * \n * @throws NoSuchElementException if this array is empty.\n */\n\n@SinceKotlin("1.3")\n\npublic fun <T> Array<out T>.random(random: Random): T {\n    if (isEmpty())\n        throw
NoSuchElementException("Array is empty.")\n    return get(random.nextInt(size))\n}\n\n/**\n * Returns a random
element from this array using the specified source of randomness.\n * \n * @throws NoSuchElementException if
this array is empty.\n */\n\n@SinceKotlin("1.3")\n\npublic fun ByteArray.random(random: Random): Byte {\n    if (isEmpty())\n        throw NoSuchElementException("Array is empty.")\n    return
get(random.nextInt(size))\n}\n\n/**\n * Returns a random element from this array using the specified source of
randomness.\n * \n * @throws NoSuchElementException if this array is empty.\n */\n\n@SinceKotlin("1.3")\n\npublic fun ShortArray.random(random: Random): Short {\n    if (isEmpty())\n        throw
NoSuchElementException("Array is empty.")\n    return get(random.nextInt(size))\n}\n\n/**\n * Returns a random
element from this array using the specified source of randomness.\n * \n * @throws NoSuchElementException if
this array is empty.\n */\n\n@SinceKotlin("1.3")\n\npublic fun IntArray.random(random: Random): Int {\n    if (isEmpty())\n        throw NoSuchElementException("Array is empty.")\n    return
get(random.nextInt(size))\n}\n\n/**\n * Returns a random element from this array using the specified source of
randomness.\n * \n * @throws NoSuchElementException if this array is empty.\n */\n\n@SinceKotlin("1.3")\n\npublic fun LongArray.random(random: Random): Long {\n    if (isEmpty())\n        throw
NoSuchElementException("Array is empty.")\n    return get(random.nextInt(size))\n}\n\n/**\n * Returns a random
element from this array using the specified source of randomness.\n * \n * @throws NoSuchElementException if

```

```

this array is empty.\n *\n@SinceKotlin("1.3")\npublic fun FloatArray.random(random: Random): Float {\n if
(isEmpty())\n throw NoSuchElementException("Array is empty.")\n return
get(random.nextInt(size))\n}\n\n/**\n * Returns a random element from this array using the specified source of
randomness.\n * \n * @throws NoSuchElementException if this array is empty.\n *\n@SinceKotlin("1.3")\npublic
fun DoubleArray.random(random: Random): Double {\n if (isEmpty())\n throw
NoSuchElementException("Array is empty.")\n return get(random.nextInt(size))\n}\n\n/**\n * Returns a random
element from this array using the specified source of randomness.\n * \n * @throws NoSuchElementException if
this array is empty.\n *\n@SinceKotlin("1.3")\npublic fun BooleanArray.random(random: Random): Boolean {\n
if (isEmpty())\n throw NoSuchElementException("Array is empty.")\n return
get(random.nextInt(size))\n}\n\n/**\n * Returns a random element from this array using the specified source of
randomness.\n * \n * @throws NoSuchElementException if this array is empty.\n *\n@SinceKotlin("1.3")\npublic
fun CharArray.random(random: Random): Char {\n if (isEmpty())\n throw NoSuchElementException("Array
is empty.")\n return get(random.nextInt(size))\n}\n\n/**\n * Returns a random element from this array, or `null` if
this array is empty.\n *\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic
inline fun <T> Array<out T>.randomOrNull(): T? {\n return randomOrNull(Random)\n}\n\n/**\n * Returns a
random element from this array, or `null` if this array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
ByteArray.randomOrNull(): Byte? {\n return randomOrNull(Random)\n}\n\n/**\n * Returns a random element
from this array, or `null` if this array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
ShortArray.randomOrNull(): Short? {\n return randomOrNull(Random)\n}\n\n/**\n * Returns a random element
from this array, or `null` if this array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
IntArray.randomOrNull(): Int? {\n return randomOrNull(Random)\n}\n\n/**\n * Returns a random element from
this array, or `null` if this array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
LongArray.randomOrNull(): Long? {\n return randomOrNull(Random)\n}\n\n/**\n * Returns a random element
from this array, or `null` if this array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
FloatArray.randomOrNull(): Float? {\n return randomOrNull(Random)\n}\n\n/**\n * Returns a random element
from this array, or `null` if this array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
DoubleArray.randomOrNull(): Double? {\n return randomOrNull(Random)\n}\n\n/**\n * Returns a random
element from this array, or `null` if this array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
BooleanArray.randomOrNull(): Boolean? {\n return randomOrNull(Random)\n}\n\n/**\n * Returns a random
element from this array, or `null` if this array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
CharArray.randomOrNull(): Char? {\n return randomOrNull(Random)\n}\n\n/**\n * Returns a random element
from this array using the specified source of randomness, or `null` if this array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun <T> Array<out T>.randomOrNull(random:
Random): T? {\n if (isEmpty())\n return null\n return get(random.nextInt(size))\n}\n\n/**\n * Returns a
random element from this array using the specified source of randomness, or `null` if this array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun ByteArray.randomOrNull(random: Random):
Byte? {\n if (isEmpty())\n return null\n return get(random.nextInt(size))\n}\n\n/**\n * Returns a random
element from this array using the specified source of randomness, or `null` if this array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun ShortArray.randomOrNull(random: Random):
Short? {\n if (isEmpty())\n return null\n return get(random.nextInt(size))\n}\n\n/**\n * Returns a random

```

```

element from this array using the specified source of randomness, or `null` if this array is empty.
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun IntArray.randomOrNull(random: Random): Int?
{\n if (isEmpty())\n return null\n return get(random.nextInt(size))\n}\n\n/**\n * Returns a random element
from this array using the specified source of randomness, or `null` if this array is empty.
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun LongArray.randomOrNull(random: Random):
Long? {\n if (isEmpty())\n return null\n return get(random.nextInt(size))\n}\n\n/**\n * Returns a random
element from this array using the specified source of randomness, or `null` if this array is empty.
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun FloatArray.randomOrNull(random: Random):
Float? {\n if (isEmpty())\n return null\n return get(random.nextInt(size))\n}\n\n/**\n * Returns a random
element from this array using the specified source of randomness, or `null` if this array is empty.
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun DoubleArray.randomOrNull(random: Random):
Double? {\n if (isEmpty())\n return null\n return get(random.nextInt(size))\n}\n\n/**\n * Returns a random
element from this array using the specified source of randomness, or `null` if this array is empty.
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun BooleanArray.randomOrNull(random: Random):
Boolean? {\n if (isEmpty())\n return null\n return get(random.nextInt(size))\n}\n\n/**\n * Returns a random
element from this array using the specified source of randomness, or `null` if this array is empty.
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun CharArray.randomOrNull(random: Random):
Char? {\n if (isEmpty())\n return null\n return get(random.nextInt(size))\n}\n\n/**\n * Returns the single
element, or throws an exception if the array is empty or has more than one element.
*\npublic fun <T> Array<out
T>.single(): T {\n return when (size) {\n 0 -> throw NoSuchElementException("Array is empty.")\n 1 ->
this[0]\n else -> throw IllegalArgumentException("Array has more than one element.")\n }\n}\n\n/**\n *
Returns the single element, or throws an exception if the array is empty or has more than one
element.
*\npublic fun ByteArray.single(): Byte {\n return when (size) {\n 0 -> throw NoSuchElementException("Array is
empty.")\n 1 -> this[0]\n else -> throw IllegalArgumentException("Array has more than one element.")\n
}\n}\n\n/**\n * Returns the single element, or throws an exception if the array is empty or has more than one
element.
*\npublic fun ShortArray.single(): Short {\n return when (size) {\n 0 -> throw
NoSuchElementException("Array is empty.")\n 1 -> this[0]\n else -> throw
IllegalArgumentException("Array has more than one element.")\n }\n}\n\n/**\n * Returns the single element, or
throws an exception if the array is empty or has more than one element.
*\npublic fun IntArray.single(): Int {\n return when (size) {\n 0 -> throw NoSuchElementException("Array is empty.")\n 1 -> this[0]\n else -
> throw IllegalArgumentException("Array has more than one element.")\n }\n}\n\n/**\n * Returns the single
element, or throws an exception if the array is empty or has more than one element.
*\npublic fun LongArray.single(): Long {\n return when (size) {\n 0 -> throw NoSuchElementException("Array is
empty.")\n 1 -> this[0]\n else -> throw IllegalArgumentException("Array has more than one element.")\n
}\n}\n\n/**\n * Returns the single element, or throws an exception if the array is empty or has more than one
element.
*\npublic fun FloatArray.single(): Float {\n return when (size) {\n 0 -> throw
NoSuchElementException("Array is empty.")\n 1 -> this[0]\n else -> throw
IllegalArgumentException("Array has more than one element.")\n }\n}\n\n/**\n * Returns the single element, or
throws an exception if the array is empty or has more than one element.
*\npublic fun DoubleArray.single(): Double {\n return when (size) {\n 0 -> throw NoSuchElementException("Array is empty.")\n 1 ->
this[0]\n else -> throw IllegalArgumentException("Array has more than one element.")\n }\n}\n\n/**\n *
Returns the single element, or throws an exception if the array is empty or has more than one
element.
*\npublic fun BooleanArray.single(): Boolean {\n return when (size) {\n 0 -> throw NoSuchElementException("Array
is empty.")\n 1 -> this[0]\n else -> throw IllegalArgumentException("Array has more than one
element.")\n }\n}\n\n/**\n * Returns the single element, or throws an exception if the array is empty or has more
than one element.
*\npublic fun CharArray.single(): Char {\n return when (size) {\n 0 -> throw
NoSuchElementException("Array is empty.")\n 1 -> this[0]\n else -> throw
IllegalArgumentException("Array has more than one element.")\n }\n}\n\n/**\n * Returns the single element

```



Returns the single element matching the given [predicate], or throws exception if there is no or more than one matching element.

```

    *^/npublic inline fun CharArray.single(predicate: (Char) -> Boolean): Char {
        var single: Char? = null
        var found = false
        for (element in this) {
            if (predicate(element)) {
                if (found)
                    throw IllegalArgumentException("Array contains more than one matching element.")
                single = element
                found = true
            }
        }
        if (!found) throw NoSuchElementException("Array contains no element matching the predicate.")
        @Suppress("UNCHECKED_CAST")
        return single as Char
    }

```

Returns single element, or `null` if the array is empty or has more than one element.

```

    *^/npublic fun <T> Array<out T>.singleOrNull(): T? {
        return if (size == 1) this[0] else null
    }

```

Returns single element, or `null` if the array is empty or has more than one element.

```

    *^/npublic fun ByteArray.singleOrNull(): Byte? {
        return if (size == 1) this[0] else null
    }

```

Returns single element, or `null` if the array is empty or has more than one element.

```

    *^/npublic fun ShortArray.singleOrNull(): Short? {
        return if (size == 1) this[0] else null
    }

```

Returns single element, or `null` if the array is empty or has more than one element.

```

    *^/npublic fun IntArray.singleOrNull(): Int? {
        return if (size == 1) this[0] else null
    }

```

Returns single element, or `null` if the array is empty or has more than one element.

```

    *^/npublic fun LongArray.singleOrNull(): Long? {
        return if (size == 1) this[0] else null
    }

```

Returns single element, or `null` if the array is empty or has more than one element.

```

    *^/npublic fun FloatArray.singleOrNull(): Float? {
        return if (size == 1) this[0] else null
    }

```

Returns single element, or `null` if the array is empty or has more than one element.

```

    *^/npublic fun DoubleArray.singleOrNull(): Double? {
        return if (size == 1) this[0] else null
    }

```

Returns single element, or `null` if the array is empty or has more than one element.

```

    *^/npublic fun BooleanArray.singleOrNull(): Boolean? {
        return if (size == 1) this[0] else null
    }

```

Returns single element, or `null` if the array is empty or has more than one element.

```

    *^/npublic fun CharArray.singleOrNull(): Char? {
        return if (size == 1) this[0] else null
    }

```

Returns the single element matching the given [predicate], or `null` if element was not found or more than one element was found.

```

    *^/npublic inline fun <T> Array<out T>.singleOrNull(predicate: (T) -> Boolean): T? {
        var single: T? = null
        var found = false
        for (element in this) {
            if (predicate(element)) {
                if (found) return null
                single = element
                found = true
            }
        }
        if (!found) return null
        return single
    }

```

Returns the single element matching the given [predicate], or `null` if element was not found or more than one element was found.

```

    *^/npublic inline fun ByteArray.singleOrNull(predicate: (Byte) -> Boolean): Byte? {
        var single: Byte? = null
        var found = false
        for (element in this) {
            if (predicate(element)) {
                if (found) return null
                single = element
                found = true
            }
        }
        if (!found) return null
        return single
    }

```

Returns the single element matching the given [predicate], or `null` if element was not found or more than one element was found.

```

    *^/npublic inline fun ShortArray.singleOrNull(predicate: (Short) -> Boolean): Short? {
        var single: Short? = null
        var found = false
        for (element in this) {
            if (predicate(element)) {
                if (found) return null
                single = element
                found = true
            }
        }
        if (!found) return null
        return single
    }

```

Returns the single element matching the given [predicate], or `null` if element was not found or more than one element was found.

```

    *^/npublic inline fun IntArray.singleOrNull(predicate: (Int) -> Boolean): Int? {
        var single: Int? = null
        var found = false
        for (element in this) {
            if (predicate(element)) {
                if (found) return null
                single = element
                found = true
            }
        }
        if (!found) return null
        return single
    }

```

Returns the single element matching the given [predicate], or `null` if element was not found or more than one element was found.

```

    *^/npublic inline fun LongArray.singleOrNull(predicate: (Long) -> Boolean): Long? {
        var single: Long? = null
        var found = false
        for (element in this) {
            if (predicate(element)) {
                if (found) return null
                single = element
                found = true
            }
        }
        if (!found) return null
        return single
    }

```

Returns the single element matching the given [predicate], or `null` if element was not found or more than one element was found.

```

    *^/npublic inline fun FloatArray.singleOrNull(predicate: (Float) -> Boolean): Float? {
        var single: Float? = null
        var found = false
        for (element in this) {
            if (predicate(element)) {
                if (found) return null
                single = element
                found = true
            }
        }
        if (!found) return null
        return single
    }

```

Returns the single element matching the given [predicate], or `null` if element was not found or more than one element was found.

```

    *^/npublic inline fun DoubleArray.singleOrNull(predicate:

```



```

(Double) -> Boolean): Double? {\n  var single: Double? = null\n  var found = false\n  for (element in this) {\n
if (predicate(element)) {\n    if (found) return null\n    single = element\n    found = true\n  }\n
}\n  if (!found) return null\n  return single\n}\n\n/**\n * Returns the single element matching the given
[predicate], or `null` if element was not found or more than one element was found.\n */\npublic inline fun
BooleanArray.singleOrNull(predicate: (Boolean) -> Boolean): Boolean? {\n  var single: Boolean? = null\n  var
found = false\n  for (element in this) {\n    if (predicate(element)) {\n      if (found) return null\n      single
= element\n      found = true\n    }\n  }\n  if (!found) return null\n  return single\n}\n\n/**\n * Returns the
single element matching the given [predicate], or `null` if element was not found or more than one element was
found.\n */\npublic inline fun CharArray.singleOrNull(predicate: (Char) -> Boolean): Char? {\n  var single: Char?
= null\n  var found = false\n  for (element in this) {\n    if (predicate(element)) {\n      if (found) return
null\n      single = element\n      found = true\n    }\n  }\n  if (!found) return null\n  return
single\n}\n\n/**\n * Returns a list containing all elements except first [n] elements.\n */\n * @throws
IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.drop\n */\npublic fun <T> Array<out T>.drop(n: Int): List<T> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  return takeLast((size -
n).coerceAtLeast(0))\n}\n\n/**\n * Returns a list containing all elements except first [n] elements.\n */\n * @throws
IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.drop\n */\npublic fun ByteArray.drop(n: Int): List<Byte> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  return takeLast((size -
n).coerceAtLeast(0))\n}\n\n/**\n * Returns a list containing all elements except first [n] elements.\n */\n * @throws
IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.drop\n */\npublic fun ShortArray.drop(n: Int): List<Short> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  return takeLast((size -
n).coerceAtLeast(0))\n}\n\n/**\n * Returns a list containing all elements except first [n] elements.\n */\n * @throws
IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.drop\n */\npublic fun IntArray.drop(n: Int): List<Int> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  return takeLast((size -
n).coerceAtLeast(0))\n}\n\n/**\n * Returns a list containing all elements except first [n] elements.\n */\n * @throws
IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.drop\n */\npublic fun LongArray.drop(n: Int): List<Long> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  return takeLast((size -
n).coerceAtLeast(0))\n}\n\n/**\n * Returns a list containing all elements except first [n] elements.\n */\n * @throws
IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.drop\n */\npublic fun FloatArray.drop(n: Int): List<Float> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  return takeLast((size -
n).coerceAtLeast(0))\n}\n\n/**\n * Returns a list containing all elements except first [n] elements.\n */\n * @throws
IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.drop\n */\npublic fun DoubleArray.drop(n: Int): List<Double> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  return takeLast((size -
n).coerceAtLeast(0))\n}\n\n/**\n * Returns a list containing all elements except first [n] elements.\n */\n * @throws
IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.drop\n */\npublic fun BooleanArray.drop(n: Int): List<Boolean>
{\n  require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  return takeLast((size -
n).coerceAtLeast(0))\n}\n\n/**\n * Returns a list containing all elements\n */\n * @throws
IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.drop\n */\npublic fun CharArray.drop(n: Int): List<Char> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  return takeLast((size -
n).coerceAtLeast(0))\n}\n\n/**\n * Returns a list containing all elements except last [n] elements.\n */\n * @throws

```

IllegalArgumentException if [n] is negative.\n \* \n \* @sample  
samples.collections.Collections.Transformations.drop\n \*\n\npublic fun <T> Array<out T>.dropLast(n: Int): List<T> {\n require(n >= 0) { \"Requested element count \$n is less than zero.\" }\n return take((size - n).coerceAtLeast(0))\n}\n\n/\*\*\n \* Returns a list containing all elements except last [n] elements.\n \* \n \* @throws  
IllegalArgumentException if [n] is negative.\n \* \n \* @sample  
samples.collections.Collections.Transformations.drop\n \*\n\npublic fun ByteArray.dropLast(n: Int): List<Byte> {\n require(n >= 0) { \"Requested element count \$n is less than zero.\" }\n return take((size - n).coerceAtLeast(0))\n}\n\n/\*\*\n \* Returns a list containing all elements except last [n] elements.\n \* \n \* @throws  
IllegalArgumentException if [n] is negative.\n \* \n \* @sample  
samples.collections.Collections.Transformations.drop\n \*\n\npublic fun ShortArray.dropLast(n: Int): List<Short> {\n require(n >= 0) { \"Requested element count \$n is less than zero.\" }\n return take((size - n).coerceAtLeast(0))\n}\n\n/\*\*\n \* Returns a list containing all elements except last [n] elements.\n \* \n \* @throws  
IllegalArgumentException if [n] is negative.\n \* \n \* @sample  
samples.collections.Collections.Transformations.drop\n \*\n\npublic fun IntArray.dropLast(n: Int): List<Int> {\n require(n >= 0) { \"Requested element count \$n is less than zero.\" }\n return take((size - n).coerceAtLeast(0))\n}\n\n/\*\*\n \* Returns a list containing all elements except last [n] elements.\n \* \n \* @throws  
IllegalArgumentException if [n] is negative.\n \* \n \* @sample  
samples.collections.Collections.Transformations.drop\n \*\n\npublic fun LongArray.dropLast(n: Int): List<Long> {\n require(n >= 0) { \"Requested element count \$n is less than zero.\" }\n return take((size - n).coerceAtLeast(0))\n}\n\n/\*\*\n \* Returns a list containing all elements except last [n] elements.\n \* \n \* @throws  
IllegalArgumentException if [n] is negative.\n \* \n \* @sample  
samples.collections.Collections.Transformations.drop\n \*\n\npublic fun FloatArray.dropLast(n: Int): List<Float> {\n require(n >= 0) { \"Requested element count \$n is less than zero.\" }\n return take((size - n).coerceAtLeast(0))\n}\n\n/\*\*\n \* Returns a list containing all elements except last [n] elements.\n \* \n \* @throws  
IllegalArgumentException if [n] is negative.\n \* \n \* @sample  
samples.collections.Collections.Transformations.drop\n \*\n\npublic fun DoubleArray.dropLast(n: Int): List<Double> {\n require(n >= 0) { \"Requested element count \$n is less than zero.\" }\n return take((size - n).coerceAtLeast(0))\n}\n\n/\*\*\n \* Returns a list containing all elements except last [n] elements.\n \* \n \* @throws  
IllegalArgumentException if [n] is negative.\n \* \n \* @sample  
samples.collections.Collections.Transformations.drop\n \*\n\npublic fun BooleanArray.dropLast(n: Int): List<Boolean> {\n require(n >= 0) { \"Requested element count \$n is less than zero.\" }\n return take((size - n).coerceAtLeast(0))\n}\n\n/\*\*\n \* Returns a list containing all elements except last [n] elements.\n \* \n \* @throws  
IllegalArgumentException if [n] is negative.\n \* \n \* @sample  
samples.collections.Collections.Transformations.drop\n \*\n\npublic fun CharArray.dropLast(n: Int): List<Char> {\n require(n >= 0) { \"Requested element count \$n is less than zero.\" }\n return take((size - n).coerceAtLeast(0))\n}\n\n/\*\*\n \* Returns a list containing all elements except last elements that satisfy the given [predicate].\n \* \n \* @sample  
samples.collections.Collections.Transformations.drop\n \*\n\npublic inline fun <T> Array<out T>.dropLastWhile(predicate: (T) -> Boolean): List<T> {\n for (index in lastIndex downTo 0) {\n if (!predicate(this[index])) {\n return take(index + 1)\n }\n }\n return emptyList()\n}\n\n/\*\*\n \* Returns a list containing all elements except last elements that satisfy the given [predicate].\n \* \n \* @sample  
samples.collections.Collections.Transformations.drop\n \*\n\npublic inline fun ByteArray.dropLastWhile(predicate: (Byte) -> Boolean): List<Byte> {\n for (index in lastIndex downTo 0) {\n if (!predicate(this[index])) {\n return take(index + 1)\n }\n }\n return emptyList()\n}\n\n/\*\*\n \* Returns a list containing all elements except last elements that satisfy the given [predicate].\n \* \n \* @sample  
samples.collections.Collections.Transformations.drop\n \*\n\npublic inline fun ShortArray.dropLastWhile(predicate: (Short) -> Boolean): List<Short> {\n for (index in lastIndex downTo 0) {\n if (!predicate(this[index])) {\n return take(index + 1)\n }\n }\n return emptyList()\n}\n\n/\*\*\n \* Returns a list containing all elements except last elements that satisfy the given [predicate].\n \* \n \* @sample

```

samples.collections.Collections.Transformations.drop\n *\npublic inline fun IntArray.dropLastWhile(predicate:
(Int) -> Boolean): List<Int> {\n  for (index in lastIndex downTo 0) {\n    if (!predicate(this[index])) {\n
return take(index + 1)\n    }\n  }\n  return emptyList()\n}\n\n/**\n * Returns a list containing all elements
except last elements that satisfy the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.drop\n *\npublic inline fun LongArray.dropLastWhile(predicate:
(Long) -> Boolean): List<Long> {\n  for (index in lastIndex downTo 0) {\n    if (!predicate(this[index])) {\n
return take(index + 1)\n    }\n  }\n  return emptyList()\n}\n\n/**\n * Returns a list containing all elements
except last elements that satisfy the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.drop\n *\npublic inline fun FloatArray.dropLastWhile(predicate:
(Float) -> Boolean): List<Float> {\n  for (index in lastIndex downTo 0) {\n    if (!predicate(this[index])) {\n
return take(index + 1)\n    }\n  }\n  return emptyList()\n}\n\n/**\n * Returns a list containing all elements
except last elements that satisfy the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.drop\n *\npublic inline fun DoubleArray.dropLastWhile(predicate:
(Double) -> Boolean): List<Double> {\n  for (index in lastIndex downTo 0) {\n    if (!predicate(this[index])) {\n
return take(index + 1)\n    }\n  }\n  return emptyList()\n}\n\n/**\n * Returns a list containing all elements
except last elements that satisfy the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.drop\n *\npublic inline fun
BooleanArray.dropLastWhile(predicate: (Boolean) -> Boolean): List<Boolean> {\n  for (index in lastIndex
downTo 0) {\n    if (!predicate(this[index])) {\n      return take(index + 1)\n    }\n  }\n  return
emptyList()\n}\n\n/**\n * Returns a list containing all elements except last elements that satisfy the given
[predicate].\n * \n * @sample
samples.collections.Collections.Transformations.drop\n *\npublic inline fun
CharArray.dropLastWhile(predicate: (Char) -> Boolean): List<Char> {\n  for (index in lastIndex downTo 0) {\n
if (!predicate(this[index])) {\n    return take(index + 1)\n  }\n}\n  return emptyList()\n}\n\n/**\n *
Returns a list containing all elements except first elements that satisfy the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.drop\n *\npublic inline fun
<T> Array<out T>.dropWhile(predicate: (T) -> Boolean): List<T> {\n  var yielding = false\n  val list = ArrayList<T>()\n  for
(item in this)\n    if (yielding)\n      list.add(item)\n    else if (!predicate(item)) {\n      list.add(item)\n
yielding = true\n    }\n  return list\n}\n\n/**\n * Returns a list containing all elements except first elements that
satisfy the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.drop\n *\npublic inline fun
ByteArray.dropWhile(predicate: (Byte) -> Boolean): List<Byte> {\n  var yielding = false\n  val list =
ArrayList<Byte>()\n  for (item in this)\n    if (yielding)\n      list.add(item)\n    else if (!predicate(item)) {\n
list.add(item)\n      yielding = true\n    }\n  return list\n}\n\n/**\n * Returns a list containing all
elements except first elements that satisfy the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.drop\n *\npublic inline fun ShortArray.dropWhile(predicate:
(Short) -> Boolean): List<Short> {\n  var yielding = false\n  val list = ArrayList<Short>()\n  for (item in this)\n
if (yielding)\n    list.add(item)\n  else if (!predicate(item)) {\n    list.add(item)\n    yielding =
true\n  }\n  return list\n}\n\n/**\n * Returns a list containing all elements except first elements that satisfy the
given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.drop\n *\npublic inline fun
IntArray.dropWhile(predicate: (Int) -> Boolean): List<Int> {\n  var yielding = false\n  val list =
ArrayList<Int>()\n  for (item in this)\n    if (yielding)\n      list.add(item)\n    else if (!predicate(item)) {\n
list.add(item)\n      yielding = true\n    }\n  return list\n}\n\n/**\n * Returns a list containing all elements
except first elements that satisfy the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.drop\n *\npublic inline fun LongArray.dropWhile(predicate:
(Long) -> Boolean): List<Long> {\n  var yielding = false\n  val list = ArrayList<Long>()\n  for (item in this)\n
if (yielding)\n    list.add(item)\n  else if (!predicate(item)) {\n    list.add(item)\n    yielding =
true\n  }\n  return list\n}\n\n/**\n * Returns a list containing all elements except first elements that satisfy the
given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.drop\n *\npublic inline fun
FloatArray.dropWhile(predicate: (Float) -> Boolean): List<Float> {\n  var yielding = false\n  val list =

```

```

ArrayList<Float>()\n for (item in this)\n     if (yielding)\n         list.add(item)\n     else if (!predicate(item))\n     {\n         list.add(item)\n         yielding = true\n     }\n return list\n}\n\n/**\n * Returns a list containing all elements except first elements that satisfy the given [predicate].\n * \n * @sample\n samples.collections.Collections.Transformations.drop\n */\npublic inline fun DoubleArray.dropWhile(predicate: (Double) -> Boolean): List<Double> {\n    var yielding = false\n    val list = ArrayList<Double>()\n    for (item in this)\n        if (yielding)\n            list.add(item)\n        else if (!predicate(item)) {\n            list.add(item)\n            yielding = true\n        }\n    return list\n}\n\n/**\n * Returns a list containing all elements except first elements that satisfy the given [predicate].\n * \n * @sample\n samples.collections.Collections.Transformations.drop\n */\npublic inline fun BooleanArray.dropWhile(predicate: (Boolean) -> Boolean): List<Boolean> {\n    var yielding = false\n    val list = ArrayList<Boolean>()\n    for (item in this)\n        if (yielding)\n            list.add(item)\n        else if (!predicate(item)) {\n            list.add(item)\n            yielding = true\n        }\n    return list\n}\n\n/**\n * Returns a list containing all elements except first elements that satisfy the given [predicate].\n * \n * @sample\n samples.collections.Collections.Transformations.drop\n */\npublic inline fun CharArray.dropWhile(predicate: (Char) -> Boolean): List<Char> {\n    var yielding = false\n    val list = ArrayList<Char>()\n    for (item in this)\n        if (yielding)\n            list.add(item)\n        else if (!predicate(item)) {\n            list.add(item)\n            yielding = true\n        }\n    return list\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n */\npublic inline fun <T> Array<out T>.filter(predicate: (T) -> Boolean): List<T> {\n    return filterTo(ArrayList<T>(), predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n */\npublic inline fun ByteArray.filter(predicate: (Byte) -> Boolean): List<Byte> {\n    return filterTo(ArrayList<Byte>(), predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n */\npublic inline fun ShortArray.filter(predicate: (Short) -> Boolean): List<Short> {\n    return filterTo(ArrayList<Short>(), predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n */\npublic inline fun IntArray.filter(predicate: (Int) -> Boolean): List<Int> {\n    return filterTo(ArrayList<Int>(), predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n */\npublic inline fun LongArray.filter(predicate: (Long) -> Boolean): List<Long> {\n    return filterTo(ArrayList<Long>(), predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n */\npublic inline fun FloatArray.filter(predicate: (Float) -> Boolean): List<Float> {\n    return filterTo(ArrayList<Float>(), predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n */\npublic inline fun DoubleArray.filter(predicate: (Double) -> Boolean): List<Double> {\n    return filterTo(ArrayList<Double>(), predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n */\npublic inline fun BooleanArray.filter(predicate: (Boolean) -> Boolean): List<Boolean> {\n    return filterTo(ArrayList<Boolean>(), predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n */\npublic inline fun CharArray.filter(predicate: (Char) -> Boolean): List<Char> {\n    return filterTo(ArrayList<Char>(), predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n * \n * @param [predicate] function that takes the index of an element and the element itself\n * and returns the result of predicate evaluation on the element.\n */\npublic inline fun <T> Array<out T>.filterIndexed(predicate: (index: Int, T) -> Boolean): List<T> {\n    return filterIndexedTo(ArrayList<T>(), predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n * \n * @param [predicate] function that takes the index of an element and the element itself\n * and returns the result of predicate evaluation on the element.\n */\npublic inline fun ByteArray.filterIndexed(predicate: (index: Int, Byte) -> Boolean): List<Byte> {\n    return filterIndexedTo(ArrayList<Byte>(), predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n * \n * @param [predicate] function that takes the index of an element and the element itself\n * and returns the result of predicate evaluation on the element.\n */\npublic inline fun ShortArray.filterIndexed(predicate: (index: Int, Short) -> Boolean): List<Short> {\n    return filterIndexedTo(ArrayList<Short>(), predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n * \n * @param [predicate] function that takes the index of an element and the element itself\n * and returns the result of predicate evaluation on the element.\n */\npublic inline fun IntArray.filterIndexed(predicate: (index: Int, Int) -> Boolean): List<Int> {\n    return filterIndexedTo(ArrayList<Int>(), predicate)\n}\n\n/**\n * Returns a list containing only elements matching the

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given [predicate].\n \* @param [predicate] function that takes the index of an element and the element itself\n \* and returns the result of predicate evaluation on the element.\n \*/\npublic inline fun LongArray.filterIndexed(predicate: (index: Int, Long) -> Boolean): List<Long> {\n return filterIndexedTo(ArrayList<Long>(), predicate)\n}\n\n/\*\*\n \* Returns a list containing only elements matching the given [predicate].\n \* @param [predicate] function that takes the index of an element and the element itself\n \* and returns the result of predicate evaluation on the element.\n \*/\npublic inline fun FloatArray.filterIndexed(predicate: (index: Int, Float) -> Boolean): List<Float> {\n return filterIndexedTo(ArrayList<Float>(), predicate)\n}\n\n/\*\*\n \* Returns a list containing only elements matching the given [predicate].\n \* @param [predicate] function that takes the index of an element and the element itself\n \* and returns the result of predicate evaluation on the element.\n \*/\npublic inline fun DoubleArray.filterIndexed(predicate: (index: Int, Double) -> Boolean): List<Double> {\n return filterIndexedTo(ArrayList<Double>(), predicate)\n}\n\n/\*\*\n \* Returns a list containing only elements matching the given [predicate].\n \* @param [predicate] function that takes the index of an element and the element itself\n \* and returns the result of predicate evaluation on the element.\n \*/\npublic inline fun BooleanArray.filterIndexed(predicate: (index: Int, Boolean) -> Boolean): List<Boolean> {\n return filterIndexedTo(ArrayList<Boolean>(), predicate)\n}\n\n/\*\*\n \* Returns a list containing only elements matching the given [predicate].\n \* @param [predicate] function that takes the index of an element and the element itself\n \* and returns the result of predicate evaluation on the element.\n \*/\npublic inline fun CharArray.filterIndexed(predicate: (index: Int, Char) -> Boolean): List<Char> {\n return filterIndexedTo(ArrayList<Char>(), predicate)\n}\n\n/\*\*\n \* Appends all elements matching the given [predicate] to the given [destination].\n \* @param [predicate] function that takes the index of an element and the element itself\n \* and returns the result of predicate evaluation on the element.\n \*/\npublic inline fun <T, C : MutableCollection<in T>> Array<out T>.filterIndexedTo(destination: C, predicate: (index: Int, T) -> Boolean): C {\n forEachIndexed { index, element ->\n if (predicate(index, element)) destination.add(element)\n }\n return destination\n}\n\n/\*\*\n \* Appends all elements matching the given [predicate] to the given [destination].\n \* @param [predicate] function that takes the index of an element and the element itself\n \* and returns the result of predicate evaluation on the element.\n \*/\npublic inline fun <C : MutableCollection<in Byte>> ByteArray.filterIndexedTo(destination: C, predicate: (index: Int, Byte) -> Boolean): C {\n forEachIndexed { index, element ->\n if (predicate(index, element)) destination.add(element)\n }\n return destination\n}\n\n/\*\*\n \* Appends all elements matching the given [predicate] to the given [destination].\n \* @param [predicate] function that takes the index of an element and the element itself\n \* and returns the result of predicate evaluation on the element.\n \*/\npublic inline fun <C : MutableCollection<in Short>> ShortArray.filterIndexedTo(destination: C, predicate: (index: Int, Short) -> Boolean): C {\n forEachIndexed { index, element ->\n if (predicate(index, element)) destination.add(element)\n }\n return destination\n}\n\n/\*\*\n \* Appends all elements matching the given [predicate] to the given [destination].\n \* @param [predicate] function that takes the index of an element and the element itself\n \* and returns the result of predicate evaluation on the element.\n \*/\npublic inline fun <C : MutableCollection<in Int>> IntArray.filterIndexedTo(destination: C, predicate: (index: Int, Int) -> Boolean): C {\n forEachIndexed { index, element ->\n if (predicate(index, element)) destination.add(element)\n }\n return destination\n}\n\n/\*\*\n \* Appends all elements matching the given [predicate] to the given [destination].\n \* @param [predicate] function that takes the index of an element and the element itself\n \* and returns the result of predicate evaluation on the element.\n \*/\npublic inline fun <C : MutableCollection<in Long>> LongArray.filterIndexedTo(destination: C, predicate: (index: Int, Long) -> Boolean): C {\n forEachIndexed { index, element ->\n if (predicate(index, element)) destination.add(element)\n }\n return destination\n}\n\n/\*\*\n \* Appends all elements matching the given [predicate] to the given [destination].\n \* @param [predicate] function that takes the index of an element and the element itself\n \* and returns the result of predicate evaluation on the element.\n \*/\npublic inline fun <C : MutableCollection<in Float>> FloatArray.filterIndexedTo(destination: C, predicate: (index: Int, Float) -> Boolean): C {\n forEachIndexed { index, element ->\n if (predicate(index, element)) destination.add(element)\n }\n return destination\n}\n\n/\*\*\n \* Appends all elements matching the given [predicate] to the given [destination].\n \* @param [predicate] function that takes the index of an element and the element itself\n \* and returns the result of predicate evaluation on the element.\n \*/\n

@param [predicate] function that takes the index of an element and the element itself\n \* and returns the result of predicate evaluation on the element.\n \*\npublic inline fun <C : MutableCollection<in Double>>  
DoubleArray.filterIndexedTo(destination: C, predicate: (index: Int, Double) -> Boolean): C {\n forEachIndexed { index, element ->\n if (predicate(index, element)) destination.add(element)\n }\n return destination}\n}\n/>\n \* Appends all elements matching the given [predicate] to the given [destination].\n \*\n@param [predicate] function that takes the index of an element and the element itself\n \* and returns the result of predicate evaluation on the element.\n \*\npublic inline fun <C : MutableCollection<in Boolean>>  
BooleanArray.filterIndexedTo(destination: C, predicate: (index: Int, Boolean) -> Boolean): C {\n forEachIndexed { index, element ->\n if (predicate(index, element)) destination.add(element)\n }\n return destination}\n}\n/>\n \* Appends all elements matching the given [predicate] to the given [destination].\n \*\n@param [predicate] function that takes the index of an element and the element itself\n \* and returns the result of predicate evaluation on the element.\n \*\npublic inline fun <C : MutableCollection<in Char>>  
CharArray.filterIndexedTo(destination: C, predicate: (index: Int, Char) -> Boolean): C {\n forEachIndexed { index, element ->\n if (predicate(index, element)) destination.add(element)\n }\n return destination}\n}\n/>\n \* Returns a list containing all elements that are instances of specified type parameter R.\n \*\npublic inline fun <reified R> Array<\*>.filterIsInstance(): List<@kotlin.internal.NoInfer R> {\n return filterIsInstanceTo(ArrayList<R>())}\n}\n/>\n \* Appends all elements that are instances of specified type parameter R to the given [destination].\n \*\npublic inline fun <reified R, C : MutableCollection<in R>>  
Array<\*>.filterIsInstanceTo(destination: C): C {\n for (element in this) if (element is R) destination.add(element)\n return destination}\n}\n/>\n \* Returns a list containing all elements not matching the given [predicate].\n \*\npublic inline fun <T> Array<out T>.filterNot(predicate: (T) -> Boolean): List<T> {\n return filterNotTo(ArrayList<T>(), predicate)}\n}\n/>\n \* Returns a list containing all elements not matching the given [predicate].\n \*\npublic inline fun ByteArray.filterNot(predicate: (Byte) -> Boolean): List<Byte> {\n return filterNotTo(ArrayList<Byte>(), predicate)}\n}\n/>\n \* Returns a list containing all elements not matching the given [predicate].\n \*\npublic inline fun ShortArray.filterNot(predicate: (Short) -> Boolean): List<Short> {\n return filterNotTo(ArrayList<Short>(), predicate)}\n}\n/>\n \* Returns a list containing all elements not matching the given [predicate].\n \*\npublic inline fun IntArray.filterNot(predicate: (Int) -> Boolean): List<Int> {\n return filterNotTo(ArrayList<Int>(), predicate)}\n}\n/>\n \* Returns a list containing all elements not matching the given [predicate].\n \*\npublic inline fun LongArray.filterNot(predicate: (Long) -> Boolean): List<Long> {\n return filterNotTo(ArrayList<Long>(), predicate)}\n}\n/>\n \* Returns a list containing all elements not matching the given [predicate].\n \*\npublic inline fun FloatArray.filterNot(predicate: (Float) -> Boolean): List<Float> {\n return filterNotTo(ArrayList<Float>(), predicate)}\n}\n/>\n \* Returns a list containing all elements not matching the given [predicate].\n \*\npublic inline fun DoubleArray.filterNot(predicate: (Double) -> Boolean): List<Double> {\n return filterNotTo(ArrayList<Double>(), predicate)}\n}\n/>\n \* Returns a list containing all elements not matching the given [predicate].\n \*\npublic inline fun BooleanArray.filterNot(predicate: (Boolean) -> Boolean): List<Boolean> {\n return filterNotTo(ArrayList<Boolean>(), predicate)}\n}\n/>\n \* Returns a list containing all elements not matching the given [predicate].\n \*\npublic inline fun CharArray.filterNot(predicate: (Char) -> Boolean): List<Char> {\n return filterNotTo(ArrayList<Char>(), predicate)}\n}\n/>\n \* Returns a list containing all elements that are not `null`.\n \*\npublic fun <T : Any> Array<out T?>.filterNotNull(): List<T> {\n return filterNotNullTo(ArrayList<T>())}\n}\n/>\n \* Appends all elements that are not `null` to the given [destination].\n \*\npublic fun <C : MutableCollection<in T>, T : Any> Array<out T?>.filterNotNullTo(destination: C): C {\n for (element in this) if (element != null) destination.add(element)\n return destination}\n}\n/>\n \* Appends all elements not matching the given [predicate] to the given [destination].\n \*\npublic inline fun <T, C : MutableCollection<in T>> Array<out T>.filterNotTo(destination: C, predicate: (T) -> Boolean): C {\n for (element in this) if (!predicate(element)) destination.add(element)\n return destination}\n}\n/>\n \* Appends all elements not matching the given [predicate] to the given [destination].\n \*\npublic inline fun <C : MutableCollection<in Byte>> ByteArray.filterNotTo(destination: C, predicate: (Byte) -> Boolean): C {\n for (element in this) if (!predicate(element)) destination.add(element)\n return destination}\n}\n/>\n \* Appends all

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elements not matching the given [predicate] to the given [destination].\n *\npublic inline fun <C :
MutableCollection<in Short>> ShortArray.filterNotTo(destination: C, predicate: (Short) -> Boolean): C {\n for
(element in this) if (!predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Appends all
elements not matching the given [predicate] to the given [destination].\n *\npublic inline fun <C :
MutableCollection<in Int>> IntArray.filterNotTo(destination: C, predicate: (Int) -> Boolean): C {\n for (element
in this) if (!predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Appends all elements
not matching the given [predicate] to the given [destination].\n *\npublic inline fun <C : MutableCollection<in
Long>> LongArray.filterNotTo(destination: C, predicate: (Long) -> Boolean): C {\n for (element in this) if
(!predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Appends all elements not
matching the given [predicate] to the given [destination].\n *\npublic inline fun <C : MutableCollection<in Float>>
FloatArray.filterNotTo(destination: C, predicate: (Float) -> Boolean): C {\n for (element in this) if
(!predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Appends all elements not
matching the given [predicate] to the given [destination].\n *\npublic inline fun <C : MutableCollection<in
Double>> DoubleArray.filterNotTo(destination: C, predicate: (Double) -> Boolean): C {\n for (element in this) if
(!predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Appends all elements not
matching the given [predicate] to the given [destination].\n *\npublic inline fun <C : MutableCollection<in
Boolean>> BooleanArray.filterNotTo(destination: C, predicate: (Boolean) -> Boolean): C {\n for (element in this)
if (!predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Appends all elements not
matching the given [predicate] to the given [destination].\n *\npublic inline fun <C : MutableCollection<in Char>>
CharArray.filterNotTo(destination: C, predicate: (Char) -> Boolean): C {\n for (element in this) if
(!predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Appends all elements matching
the given [predicate] to the given [destination].\n *\npublic inline fun <T, C : MutableCollection<in T>> Array<out
T>.filterTo(destination: C, predicate: (T) -> Boolean): C {\n for (element in this) if (predicate(element))
destination.add(element)\n return destination\n}\n\n/**\n * Appends all elements matching the given [predicate] to
the given [destination].\n *\npublic inline fun <C : MutableCollection<in Byte>> ByteArray.filterTo(destination: C,
predicate: (Byte) -> Boolean): C {\n for (element in this) if (predicate(element)) destination.add(element)\n
return destination\n}\n\n/**\n * Appends all elements matching the given [predicate] to the given [destination].\n
*\npublic inline fun <C : MutableCollection<in Short>> ShortArray.filterTo(destination: C, predicate: (Short) ->
Boolean): C {\n for (element in this) if (predicate(element)) destination.add(element)\n return
destination\n}\n\n/**\n * Appends all elements matching the given [predicate] to the given [destination].\n
*\npublic inline fun <C : MutableCollection<in Int>> IntArray.filterTo(destination: C, predicate: (Int) -> Boolean):
C {\n for (element in this) if (predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n *
Appends all elements matching the given [predicate] to the given [destination].\n *\npublic inline fun <C :
MutableCollection<in Long>> LongArray.filterTo(destination: C, predicate: (Long) -> Boolean): C {\n for
(element in this) if (predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Appends all
elements matching the given [predicate] to the given [destination].\n *\npublic inline fun <C :
MutableCollection<in Float>> FloatArray.filterTo(destination: C, predicate: (Float) -> Boolean): C {\n for
(element in this) if (predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Appends all
elements matching the given [predicate] to the given [destination].\n *\npublic inline fun <C :
MutableCollection<in Double>> DoubleArray.filterTo(destination: C, predicate: (Double) -> Boolean): C {\n for
(element in this) if (predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Appends all
elements matching the given [predicate] to the given [destination].\n *\npublic inline fun <C :
MutableCollection<in Boolean>> BooleanArray.filterTo(destination: C, predicate: (Boolean) -> Boolean): C {\n
for (element in this) if (predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Appends
all elements matching the given [predicate] to the given [destination].\n *\npublic inline fun <C :
MutableCollection<in Char>> CharArray.filterTo(destination: C, predicate: (Char) -> Boolean): C {\n for
(element in this) if (predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Returns a list
containing elements at indices in the specified [indices] range.\n *\npublic fun <T> Array<out T>.slice(indices:

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IntRange): List<T> {\n  if (indices.isEmpty()) return listOf()\n  return copyOfRange(indices.start,
indices.endInclusive + 1).asList()\n}\n\n/**\n * Returns a list containing elements at indices in the specified
[indices] range.\n */\npublic fun ByteArray.slice(indices: IntRange): List<Byte> {\n  if (indices.isEmpty()) return
listOf()\n  return copyOfRange(indices.start, indices.endInclusive + 1).asList()\n}\n\n/**\n * Returns a list
containing elements at indices in the specified [indices] range.\n */\npublic fun ShortArray.slice(indices: IntRange):
List<Short> {\n  if (indices.isEmpty()) return listOf()\n  return copyOfRange(indices.start, indices.endInclusive +
1).asList()\n}\n\n/**\n * Returns a list containing elements at indices in the specified [indices] range.\n */\npublic
fun IntArray.slice(indices: IntRange): List<Int> {\n  if (indices.isEmpty()) return listOf()\n  return
copyOfRange(indices.start, indices.endInclusive + 1).asList()\n}\n\n/**\n * Returns a list containing elements at
indices in the specified [indices] range.\n */\npublic fun LongArray.slice(indices: IntRange): List<Long> {\n  if
(indices.isEmpty()) return listOf()\n  return copyOfRange(indices.start, indices.endInclusive +
1).asList()\n}\n\n/**\n * Returns a list containing elements at indices in the specified [indices] range.\n */\npublic
fun FloatArray.slice(indices: IntRange): List<Float> {\n  if (indices.isEmpty()) return listOf()\n  return
copyOfRange(indices.start, indices.endInclusive + 1).asList()\n}\n\n/**\n * Returns a list containing elements at
indices in the specified [indices] range.\n */\npublic fun DoubleArray.slice(indices: IntRange): List<Double> {\n  if
if (indices.isEmpty()) return listOf()\n  return copyOfRange(indices.start, indices.endInclusive +
1).asList()\n}\n\n/**\n * Returns a list containing elements at indices in the specified [indices] range.\n */\npublic
fun BooleanArray.slice(indices: IntRange): List<Boolean> {\n  if (indices.isEmpty()) return listOf()\n  return
copyOfRange(indices.start, indices.endInclusive + 1).asList()\n}\n\n/**\n * Returns a list containing elements at
indices in the specified [indices] range.\n */\npublic fun CharArray.slice(indices: IntRange): List<Char> {\n  if
(indices.isEmpty()) return listOf()\n  return copyOfRange(indices.start, indices.endInclusive +
1).asList()\n}\n\n/**\n * Returns a list containing elements at specified [indices].\n */\npublic fun <T> Array<out
T>.slice(indices: Iterable<Int>): List<T> {\n  val size = indices.collectionSizeOrDefault(10)\n  if (size == 0)
return emptyList()\n  val list = ArrayList<T>(size)\n  for (index in indices) {\n    list.add(get(index))\n  }\n  return list\n}\n\n/**\n * Returns a list containing elements at specified [indices].\n */\npublic fun
ByteArray.slice(indices: Iterable<Int>): List<Byte> {\n  val size = indices.collectionSizeOrDefault(10)\n  if (size
== 0) return emptyList()\n  val list = ArrayList<Byte>(size)\n  for (index in indices) {\n    list.add(get(index))\n
  }\n  return list\n}\n\n/**\n * Returns a list containing elements at specified [indices].\n */\npublic fun
ShortArray.slice(indices: Iterable<Int>): List<Short> {\n  val size = indices.collectionSizeOrDefault(10)\n  if
(size == 0) return emptyList()\n  val list = ArrayList<Short>(size)\n  for (index in indices) {\n    list.add(get(index))\n
  }\n  return list\n}\n\n/**\n * Returns a list containing elements at specified [indices].\n */\npublic fun
IntArray.slice(indices: Iterable<Int>): List<Int> {\n  val size =
indices.collectionSizeOrDefault(10)\n  if (size == 0) return emptyList()\n  val list = ArrayList<Int>(size)\n  for
(index in indices) {\n    list.add(get(index))\n  }\n  return list\n}\n\n/**\n * Returns a list containing elements at
specified [indices].\n */\npublic fun LongArray.slice(indices: Iterable<Int>): List<Long> {\n  val size =
indices.collectionSizeOrDefault(10)\n  if (size == 0) return emptyList()\n  val list = ArrayList<Long>(size)\n
for (index in indices) {\n    list.add(get(index))\n  }\n  return list\n}\n\n/**\n * Returns a list containing
elements at specified [indices].\n */\npublic fun FloatArray.slice(indices: Iterable<Int>): List<Float> {\n  val size =
indices.collectionSizeOrDefault(10)\n  if (size == 0) return emptyList()\n  val list = ArrayList<Float>(size)\n
for (index in indices) {\n    list.add(get(index))\n  }\n  return list\n}\n\n/**\n * Returns a list containing
elements at specified [indices].\n */\npublic fun DoubleArray.slice(indices: Iterable<Int>): List<Double> {\n  val
size = indices.collectionSizeOrDefault(10)\n  if (size == 0) return emptyList()\n  val list =
ArrayList<Double>(size)\n  for (index in indices) {\n    list.add(get(index))\n  }\n  return list\n}\n\n/**\n *
Returns a list containing elements at specified [indices].\n */\npublic fun BooleanArray.slice(indices: Iterable<Int>):
List<Boolean> {\n  val size = indices.collectionSizeOrDefault(10)\n  if (size == 0) return emptyList()\n  val list
= ArrayList<Boolean>(size)\n  for (index in indices) {\n    list.add(get(index))\n  }\n  return list\n}\n\n/**\n *
Returns a list containing elements at specified [indices].\n */\npublic fun CharArray.slice(indices: Iterable<Int>):
List<Char> {\n  val size = indices.collectionSizeOrDefault(10)\n  if (size == 0) return emptyList()\n  val list =

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ArrayList<Char>.sliceArray(indices: Collection<Int>): ArrayList<Char> {\n    list.add(get(index))\n } \n return list\n}\n\n/**\n * Returns an array containing elements of this array at specified [indices].\n */\npublic fun <T>
Array<T>.sliceArray(indices: Collection<Int>): Array<T> {\n    val result = arrayOfNulls(this, indices.size)\n    var
targetIndex = 0\n    for (sourceIndex in indices) {\n        result[targetIndex++] = this[sourceIndex]\n    }\n    return
result\n}\n\n/**\n * Returns an array containing elements of this array at specified [indices].\n */\npublic fun
ByteArray.sliceArray(indices: Collection<Int>): ByteArray {\n    val result = ByteArray(indices.size)\n    var
targetIndex = 0\n    for (sourceIndex in indices) {\n        result[targetIndex++] = this[sourceIndex]\n    }\n    return
result\n}\n\n/**\n * Returns an array containing elements of this array at specified [indices].\n */\npublic fun
ShortArray.sliceArray(indices: Collection<Int>): ShortArray {\n    val result = ShortArray(indices.size)\n    var
targetIndex = 0\n    for (sourceIndex in indices) {\n        result[targetIndex++] = this[sourceIndex]\n    }\n    return
result\n}\n\n/**\n * Returns an array containing elements of this array at specified [indices].\n */\npublic fun
IntArray.sliceArray(indices: Collection<Int>): IntArray {\n    val result = IntArray(indices.size)\n    var targetIndex
= 0\n    for (sourceIndex in indices) {\n        result[targetIndex++] = this[sourceIndex]\n    }\n    return
result\n}\n\n/**\n * Returns an array containing elements of this array at specified [indices].\n */\npublic fun
LongArray.sliceArray(indices: Collection<Int>): LongArray {\n    val result = LongArray(indices.size)\n    var
targetIndex = 0\n    for (sourceIndex in indices) {\n        result[targetIndex++] = this[sourceIndex]\n    }\n    return
result\n}\n\n/**\n * Returns an array containing elements of this array at specified [indices].\n */\npublic fun
FloatArray.sliceArray(indices: Collection<Int>): FloatArray {\n    val result = FloatArray(indices.size)\n    var
targetIndex = 0\n    for (sourceIndex in indices) {\n        result[targetIndex++] = this[sourceIndex]\n    }\n    return
result\n}\n\n/**\n * Returns an array containing elements of this array at specified [indices].\n */\npublic fun
DoubleArray.sliceArray(indices: Collection<Int>): DoubleArray {\n    val result = DoubleArray(indices.size)\n    var
targetIndex = 0\n    for (sourceIndex in indices) {\n        result[targetIndex++] = this[sourceIndex]\n    }\n    return
result\n}\n\n/**\n * Returns an array containing elements of this array at specified [indices].\n */\npublic fun
BooleanArray.sliceArray(indices: Collection<Int>): BooleanArray {\n    val result = BooleanArray(indices.size)\n    var
targetIndex = 0\n    for (sourceIndex in indices) {\n        result[targetIndex++] = this[sourceIndex]\n    }\n    return
result\n}\n\n/**\n * Returns an array containing elements of this array at specified [indices].\n */\npublic fun
CharArray.sliceArray(indices: Collection<Int>): CharArray {\n    val result = CharArray(indices.size)\n    var
targetIndex = 0\n    for (sourceIndex in indices) {\n        result[targetIndex++] = this[sourceIndex]\n    }\n    return
result\n}\n\n/**\n * Returns an array containing elements at indices in the specified [indices] range.\n */\npublic fun
<T> Array<T>.sliceArray(indices: IntRange): Array<T> {\n    if (indices.isEmpty()) return copyOfRange(0, 0)\n    return
copyOfRange(indices.start, indices.endInclusive + 1)\n}\n\n/**\n * Returns an array containing elements at
indices in the specified [indices] range.\n */\npublic fun ByteArray.sliceArray(indices: IntRange): ByteArray {\n    if
(indices.isEmpty()) return ByteArray(0)\n    return copyOfRange(indices.start, indices.endInclusive + 1)\n}\n\n/**\n * Returns an array containing elements at indices in the specified [indices] range.\n */\npublic fun
ShortArray.sliceArray(indices: IntRange): ShortArray {\n    if (indices.isEmpty()) return ShortArray(0)\n    return
copyOfRange(indices.start, indices.endInclusive + 1)\n}\n\n/**\n * Returns an array containing elements at indices
in the specified [indices] range.\n */\npublic fun IntArray.sliceArray(indices: IntRange): IntArray {\n    if
(indices.isEmpty()) return IntArray(0)\n    return copyOfRange(indices.start, indices.endInclusive + 1)\n}\n\n/**\n * Returns an array containing elements at indices in the specified [indices] range.\n */\npublic fun
LongArray.sliceArray(indices: IntRange): LongArray {\n    if (indices.isEmpty()) return LongArray(0)\n    return
copyOfRange(indices.start, indices.endInclusive + 1)\n}\n\n/**\n * Returns an array containing elements at indices
in the specified [indices] range.\n */\npublic fun FloatArray.sliceArray(indices: IntRange): FloatArray {\n    if
(indices.isEmpty()) return FloatArray(0)\n    return copyOfRange(indices.start, indices.endInclusive + 1)\n}\n\n/**\n * Returns an array containing elements at indices in the specified [indices] range.\n */\npublic fun
DoubleArray.sliceArray(indices: IntRange): DoubleArray {\n    if (indices.isEmpty()) return DoubleArray(0)\n    return
copyOfRange(indices.start, indices.endInclusive + 1)\n}\n\n/**\n * Returns an array containing elements at
indices in the specified [indices] range.\n */\npublic fun BooleanArray.sliceArray(indices: IntRange): BooleanArray
{\n    if (indices.isEmpty()) return BooleanArray(0)\n    return copyOfRange(indices.start, indices.endInclusive +

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1)\n}\n\n/**\n * Returns an array containing elements at indices in the specified [indices] range.\n */\npublic fun
CharArray.sliceArray(indices: IntRange): CharArray {\n    if (indices.isEmpty()) return CharArray(0)\n    return
copyOfRange(indices.start, indices.endInclusive + 1)\n}\n\n/**\n * Returns a list containing first [n] elements.\n */\n * @throws IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.take\n */\npublic fun <T> Array<out T>.take(n: Int): List<T> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n    if (n == 0) return emptyList()\n    if (n >=
size) return toList()\n    if (n == 1) return listOf(this[0])\n    var count = 0\n    val list = ArrayList<T>(n)\n    for
(item in this) {\n        list.add(item)\n        if (++count == n)\n            break\n    }\n    return list\n}\n\n/**\n * Returns
a list containing first [n] elements.\n */\n * @throws IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.take\n */\npublic fun ByteArray.take(n: Int): List<Byte> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n    if (n == 0) return emptyList()\n    if (n >=
size) return toList()\n    if (n == 1) return listOf(this[0])\n    var count = 0\n    val list = ArrayList<Byte>(n)\n    for
(item in this) {\n        list.add(item)\n        if (++count == n)\n            break\n    }\n    return list\n}\n\n/**\n * Returns
a list containing first [n] elements.\n */\n * @throws IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.take\n */\npublic fun ShortArray.take(n: Int): List<Short> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n    if (n == 0) return emptyList()\n    if (n >=
size) return toList()\n    if (n == 1) return listOf(this[0])\n    var count = 0\n    val list = ArrayList<Short>(n)\n    for
(item in this) {\n        list.add(item)\n        if (++count == n)\n            break\n    }\n    return list\n}\n\n/**\n * Returns
a list containing first [n] elements.\n */\n * @throws IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.take\n */\npublic fun IntArray.take(n: Int): List<Int> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n    if (n == 0) return emptyList()\n    if (n >=
size) return toList()\n    if (n == 1) return listOf(this[0])\n    var count = 0\n    val list = ArrayList<Int>(n)\n    for
(item in this) {\n        list.add(item)\n        if (++count == n)\n            break\n    }\n    return list\n}\n\n/**\n * Returns
a list containing first [n] elements.\n */\n * @throws IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.take\n */\npublic fun LongArray.take(n: Int): List<Long> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n    if (n == 0) return emptyList()\n    if (n >=
size) return toList()\n    if (n == 1) return listOf(this[0])\n    var count = 0\n    val list = ArrayList<Long>(n)\n    for
(item in this) {\n        list.add(item)\n        if (++count == n)\n            break\n    }\n    return list\n}\n\n/**\n * Returns
a list containing first [n] elements.\n */\n * @throws IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.take\n */\npublic fun FloatArray.take(n: Int): List<Float> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n    if (n == 0) return emptyList()\n    if (n >=
size) return toList()\n    if (n == 1) return listOf(this[0])\n    var count = 0\n    val list = ArrayList<Float>(n)\n    for
(item in this) {\n        list.add(item)\n        if (++count == n)\n            break\n    }\n    return list\n}\n\n/**\n * Returns
a list containing first [n] elements.\n */\n * @throws IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.take\n */\npublic fun DoubleArray.take(n: Int): List<Double> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n    if (n == 0) return emptyList()\n    if (n >=
size) return toList()\n    if (n == 1) return listOf(this[0])\n    var count = 0\n    val list = ArrayList<Double>(n)\n
for (item in this) {\n        list.add(item)\n        if (++count == n)\n            break\n    }\n    return list\n}\n\n/**\n *
Returns a list containing first [n] elements.\n */\n * @throws IllegalArgumentException if [n] is negative.\n */\n * @sample
samples.collections.Collections.Transformations.take\n */\npublic fun BooleanArray.take(n: Int):
List<Boolean> {\n    require(n >= 0) { \"Requested element count $n is less than zero.\" }\n    if (n == 0) return
emptyList()\n    if (n >= size) return toList()\n    if (n == 1) return listOf(this[0])\n    var count = 0\n    val list =
ArrayList<Boolean>(n)\n    for (item in this) {\n        list.add(item)\n        if (++count == n)\n            break\n    }\n
return list\n}\n\n/**\n * Returns a list containing first [n] elements.\n */\n * @throws IllegalArgumentException if
[n] is negative.\n */\n * @sample samples.collections.Collections.Transformations.take\n */\npublic fun
CharArray.take(n: Int): List<Char> {\n    require(n >= 0) { \"Requested element count $n is less than zero.\" }\n    if
(n == 0) return emptyList()\n    if (n >= size) return toList()\n    if (n == 1) return listOf(this[0])\n    var count = 0\n
val list = ArrayList<Char>(n)\n    for (item in this) {\n        list.add(item)\n        if (++count == n)\n            break\n
}

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}\n  return list\n}\n\n/**\n * Returns a list containing last [n] elements.\n * \n * @throws
IllegalArgumentExcepion if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic fun <T> Array<out T>.takeLast(n: Int): List<T>
{\n  require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  if (n == 0) return emptyList()\n  val
size = size\n  if (n >= size) return toList()\n  if (n == 1) return listOf(this[size - 1])\n  val list =
ArrayList<T>(n)\n  for (index in size - n until size)\n    list.add(this[index])\n  return list\n}\n\n/**\n * Returns
a list containing last [n] elements.\n * \n * @throws IllegalArgumentExcepion if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic fun ByteArray.takeLast(n: Int): List<Byte> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  if (n == 0) return emptyList()\n  val size =
size\n  if (n >= size) return toList()\n  if (n == 1) return listOf(this[size - 1])\n  val list = ArrayList<Byte>(n)\n
for (index in size - n until size)\n    list.add(this[index])\n  return list\n}\n\n/**\n * Returns a list containing last
[n] elements.\n * \n * @throws IllegalArgumentExcepion if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic fun ShortArray.takeLast(n: Int): List<Short> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  if (n == 0) return emptyList()\n  val size =
size\n  if (n >= size) return toList()\n  if (n == 1) return listOf(this[size - 1])\n  val list = ArrayList<Short>(n)\n
for (index in size - n until size)\n    list.add(this[index])\n  return list\n}\n\n/**\n * Returns a list containing last
[n] elements.\n * \n * @throws IllegalArgumentExcepion if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic fun IntArray.takeLast(n: Int): List<Int> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  if (n == 0) return emptyList()\n  val size =
size\n  if (n >= size) return toList()\n  if (n == 1) return listOf(this[size - 1])\n  val list = ArrayList<Int>(n)\n
for (index in size - n until size)\n    list.add(this[index])\n  return list\n}\n\n/**\n * Returns a list containing last
[n] elements.\n * \n * @throws IllegalArgumentExcepion if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic fun LongArray.takeLast(n: Int): List<Long> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  if (n == 0) return emptyList()\n  val size =
size\n  if (n >= size) return toList()\n  if (n == 1) return listOf(this[size - 1])\n  val list = ArrayList<Long>(n)\n
for (index in size - n until size)\n    list.add(this[index])\n  return list\n}\n\n/**\n * Returns a list containing last
[n] elements.\n * \n * @throws IllegalArgumentExcepion if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic fun FloatArray.takeLast(n: Int): List<Float> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  if (n == 0) return emptyList()\n  val size =
size\n  if (n >= size) return toList()\n  if (n == 1) return listOf(this[size - 1])\n  val list = ArrayList<Float>(n)\n
for (index in size - n until size)\n    list.add(this[index])\n  return list\n}\n\n/**\n * Returns a list containing last
[n] elements.\n * \n * @throws IllegalArgumentExcepion if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic fun DoubleArray.takeLast(n: Int): List<Double>
{\n  require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  if (n == 0) return emptyList()\n  val
size = size\n  if (n >= size) return toList()\n  if (n == 1) return listOf(this[size - 1])\n  val list =
ArrayList<Double>(n)\n  for (index in size - n until size)\n    list.add(this[index])\n  return list\n}\n\n/**\n *
Returns a list containing last [n] elements.\n * \n * @throws IllegalArgumentExcepion if [n] is negative.\n * \n *
@sample samples.collections.Collections.Transformations.take\n *\npublic fun BooleanArray.takeLast(n: Int):
List<Boolean> {\n  require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  if (n == 0) return
emptyList()\n  val size = size\n  if (n >= size) return toList()\n  if (n == 1) return listOf(this[size - 1])\n  val
list = ArrayList<Boolean>(n)\n  for (index in size - n until size)\n    list.add(this[index])\n  return list\n}\n\n/**\n *
Returns a list containing last [n] elements.\n * \n * @throws IllegalArgumentExcepion if [n] is negative.\n * \n *
@sample samples.collections.Collections.Transformations.take\n *\npublic fun CharArray.takeLast(n: Int):
List<Char> {\n  require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  if (n == 0) return
emptyList()\n  val size = size\n  if (n >= size) return toList()\n  if (n == 1) return listOf(this[size - 1])\n  val
list = ArrayList<Char>(n)\n  for (index in size - n until size)\n    list.add(this[index])\n  return list\n}\n\n/**\n *
Returns a list containing last elements satisfying the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic inline fun <T> Array<out

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T>.takeLastWhile(predicate: (T) -> Boolean): List<T> {\n  for (index in lastIndex downTo 0) {\n    if
(!predicate(this[index])) {\n      return drop(index + 1)\n    }\n  }\n  return toList()\n}\n\n/**\n * Returns a
list containing last elements satisfying the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic inline fun ByteArray.takeLastWhile(predicate:
(Byte) -> Boolean): List<Byte> {\n  for (index in lastIndex downTo 0) {\n    if (!predicate(this[index])) {\n
return drop(index + 1)\n    }\n  }\n  return toList()\n}\n\n/**\n * Returns a list containing last elements
satisfying the given [predicate].\n * \n * @sample samples.collections.Collections.Transformations.take\n *\npublic
inline fun ShortArray.takeLastWhile(predicate: (Short) -> Boolean): List<Short> {\n  for (index in lastIndex
downTo 0) {\n    if (!predicate(this[index])) {\n      return drop(index + 1)\n    }\n  }\n  return
toList()\n}\n\n/**\n * Returns a list containing last elements satisfying the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic inline fun IntArray.takeLastWhile(predicate: (Int)
-> Boolean): List<Int> {\n  for (index in lastIndex downTo 0) {\n    if (!predicate(this[index])) {\n      return
drop(index + 1)\n    }\n  }\n  return toList()\n}\n\n/**\n * Returns a list containing last elements satisfying the
given [predicate].\n * \n * @sample samples.collections.Collections.Transformations.take\n *\npublic inline fun
LongArray.takeLastWhile(predicate: (Long) -> Boolean): List<Long> {\n  for (index in lastIndex downTo 0) {\n
if (!predicate(this[index])) {\n      return drop(index + 1)\n    }\n  }\n  return toList()\n}\n\n/**\n * Returns
a list containing last elements satisfying the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic inline fun FloatArray.takeLastWhile(predicate:
(Float) -> Boolean): List<Float> {\n  for (index in lastIndex downTo 0) {\n    if (!predicate(this[index])) {\n
return drop(index + 1)\n    }\n  }\n  return toList()\n}\n\n/**\n * Returns a list containing last elements
satisfying the given [predicate].\n * \n * @sample samples.collections.Collections.Transformations.take\n *\npublic
inline fun DoubleArray.takeLastWhile(predicate: (Double) -> Boolean): List<Double> {\n  for (index in lastIndex
downTo 0) {\n    if (!predicate(this[index])) {\n      return drop(index + 1)\n    }\n  }\n  return
toList()\n}\n\n/**\n * Returns a list containing last elements satisfying the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic inline fun
BooleanArray.takeLastWhile(predicate: (Boolean) -> Boolean): List<Boolean> {\n  for (index in lastIndex
downTo 0) {\n    if (!predicate(this[index])) {\n      return drop(index + 1)\n    }\n  }\n  return
toList()\n}\n\n/**\n * Returns a list containing last elements satisfying the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic inline fun CharArray.takeLastWhile(predicate:
(Char) -> Boolean): List<Char> {\n  for (index in lastIndex downTo 0) {\n    if (!predicate(this[index])) {\n
return drop(index + 1)\n    }\n  }\n  return toList()\n}\n\n/**\n * Returns a list containing first elements
satisfying the given [predicate].\n * \n * @sample samples.collections.Collections.Transformations.take\n *\npublic
inline fun <T> Array<out T>.takeWhile(predicate: (T) -> Boolean): List<T> {\n  val list = ArrayList<T>()\n  for
(item in this) {\n    if (!predicate(item))\n      break\n    list.add(item)\n  }\n  return list\n}\n\n/**\n *
Returns a list containing first elements satisfying the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic inline fun ByteArray.takeWhile(predicate: (Byte)
-> Boolean): List<Byte> {\n  val list = ArrayList<Byte>()\n  for (item in this) {\n    if (!predicate(item))\n
break\n    list.add(item)\n  }\n  return list\n}\n\n/**\n * Returns a list containing first elements satisfying the
given [predicate].\n * \n * @sample samples.collections.Collections.Transformations.take\n *\npublic inline fun
ShortArray.takeWhile(predicate: (Short) -> Boolean): List<Short> {\n  val list = ArrayList<Short>()\n  for (item
in this) {\n    if (!predicate(item))\n      break\n    list.add(item)\n  }\n  return list\n}\n\n/**\n * Returns a
list containing first elements satisfying the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic inline fun IntArray.takeWhile(predicate: (Int) ->
Boolean): List<Int> {\n  val list = ArrayList<Int>()\n  for (item in this) {\n    if (!predicate(item))\n
break\n    list.add(item)\n  }\n  return list\n}\n\n/**\n * Returns a list containing first elements satisfying the
given [predicate].\n * \n * @sample samples.collections.Collections.Transformations.take\n *\npublic inline fun
LongArray.takeWhile(predicate: (Long) -> Boolean): List<Long> {\n  val list = ArrayList<Long>()\n  for (item
in this) {\n    if (!predicate(item))\n      break\n    list.add(item)\n  }\n  return list\n}\n\n/**\n * Returns a

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list containing first elements satisfying the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic inline fun FloatArray.takeWhile(predicate:
(Float) -> Boolean): List<Float> {\n  val list = ArrayList<Float>()\n  for (item in this) {\n    if
(!predicate(item))\n      break\n    list.add(item)\n  }\n  return list\n}\n\n/**\n * Returns a list containing first
elements satisfying the given [predicate].\n * \n * @sample samples.collections.Collections.Transformations.take\n
*\npublic inline fun DoubleArray.takeWhile(predicate: (Double) -> Boolean): List<Double> {\n  val list =
ArrayList<Double>()\n  for (item in this) {\n    if (!predicate(item))\n      break\n    list.add(item)\n  }\n
return list\n}\n\n/**\n * Returns a list containing first elements satisfying the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.take\n *\npublic inline fun BooleanArray.takeWhile(predicate:
(Boolean) -> Boolean): List<Boolean> {\n  val list = ArrayList<Boolean>()\n  for (item in this) {\n    if
(!predicate(item))\n      break\n    list.add(item)\n  }\n  return list\n}\n\n/**\n * Returns a list containing first
elements satisfying the given [predicate].\n * \n * @sample samples.collections.Collections.Transformations.take\n
*\npublic inline fun CharArray.takeWhile(predicate: (Char) -> Boolean): List<Char> {\n  val list =
ArrayList<Char>()\n  for (item in this) {\n    if (!predicate(item))\n      break\n    list.add(item)\n  }\n
return list\n}\n\n/**\n * Reverses elements in the array in-place.\n *\npublic fun <T> Array<T>.reverse(): Unit {\n
val midPoint = (size / 2) - 1\n  if (midPoint < 0) return\n  var reverseIndex = lastIndex\n  for (index in
0..midPoint) {\n    val tmp = this[index]\n    this[index] = this[reverseIndex]\n    this[reverseIndex] = tmp\n
reverseIndex--\n  }\n}\n\n/**\n * Reverses elements in the array in-place.\n *\npublic fun ByteArray.reverse():
Unit {\n  val midPoint = (size / 2) - 1\n  if (midPoint < 0) return\n  var reverseIndex = lastIndex\n  for (index in
0..midPoint) {\n    val tmp = this[index]\n    this[index] = this[reverseIndex]\n    this[reverseIndex] = tmp\n
reverseIndex--\n  }\n}\n\n/**\n * Reverses elements in the array in-place.\n *\npublic fun ShortArray.reverse():
Unit {\n  val midPoint = (size / 2) - 1\n  if (midPoint < 0) return\n  var reverseIndex = lastIndex\n  for (index in
0..midPoint) {\n    val tmp = this[index]\n    this[index] = this[reverseIndex]\n    this[reverseIndex] = tmp\n
reverseIndex--\n  }\n}\n\n/**\n * Reverses elements in the array in-place.\n *\npublic fun IntArray.reverse():
Unit {\n  val midPoint = (size / 2) - 1\n  if (midPoint < 0) return\n  var reverseIndex = lastIndex\n  for (index in
0..midPoint) {\n    val tmp = this[index]\n    this[index] = this[reverseIndex]\n    this[reverseIndex] = tmp\n
reverseIndex--\n  }\n}\n\n/**\n * Reverses elements in the array in-place.\n *\npublic fun LongArray.reverse():
Unit {\n  val midPoint = (size / 2) - 1\n  if (midPoint < 0) return\n  var reverseIndex = lastIndex\n  for (index in
0..midPoint) {\n    val tmp = this[index]\n    this[index] = this[reverseIndex]\n    this[reverseIndex] = tmp\n
reverseIndex--\n  }\n}\n\n/**\n * Reverses elements in the array in-place.\n *\npublic fun FloatArray.reverse():
Unit {\n  val midPoint = (size / 2) - 1\n  if (midPoint < 0) return\n  var reverseIndex = lastIndex\n  for (index in
0..midPoint) {\n    val tmp = this[index]\n    this[index] = this[reverseIndex]\n    this[reverseIndex] = tmp\n
reverseIndex--\n  }\n}\n\n/**\n * Reverses elements in the array in-place.\n *\npublic fun
DoubleArray.reverse(): Unit {\n  val midPoint = (size / 2) - 1\n  if (midPoint < 0) return\n  var reverseIndex =
lastIndex\n  for (index in 0..midPoint) {\n    val tmp = this[index]\n    this[index] = this[reverseIndex]\n
this[reverseIndex] = tmp\n    reverseIndex--\n  }\n}\n\n/**\n * Reverses elements in the array in-place.\n
*\npublic fun BooleanArray.reverse(): Unit {\n  val midPoint = (size / 2) - 1\n  if (midPoint < 0) return\n  var
reverseIndex = lastIndex\n  for (index in 0..midPoint) {\n    val tmp = this[index]\n    this[index] =
this[reverseIndex]\n    this[reverseIndex] = tmp\n    reverseIndex--\n  }\n}\n\n/**\n * Reverses elements in the
array in-place.\n *\npublic fun CharArray.reverse(): Unit {\n  val midPoint = (size / 2) - 1\n  if (midPoint < 0)
return\n  var reverseIndex = lastIndex\n  for (index in 0..midPoint) {\n    val tmp = this[index]\n    this[index]
= this[reverseIndex]\n    this[reverseIndex] = tmp\n    reverseIndex--\n  }\n}\n\n/**\n * Returns a list with
elements in reversed order.\n *\npublic fun <T> Array<out T>.reversed(): List<T> {\n  if (isEmpty()) return
emptyList()\n  val list = toMutableList()\n  list.reverse()\n  return list\n}\n\n/**\n * Returns a list with elements
in reversed order.\n *\npublic fun ByteArray.reversed(): List<Byte> {\n  if (isEmpty()) return emptyList()\n  val
list = toMutableList()\n  list.reverse()\n  return list\n}\n\n/**\n * Returns a list with elements in reversed order.\n
*\npublic fun ShortArray.reversed(): List<Short> {\n  if (isEmpty()) return emptyList()\n  val list =
toMutableList()\n  list.reverse()\n  return list\n}\n\n/**\n * Returns a list with elements in reversed order.\n

```

```

*^public fun IntArray.reversed(): List<Int> {
    if (isEmpty()) return emptyList()
    val list = toMutableList()
    list.reverse()
    return list
}

* Returns a list with elements in reversed order.

*^public fun
LongArray.reversed(): List<Long> {
    if (isEmpty()) return emptyList()
    val list = toMutableList()
    list.reverse()
    return list
}

* Returns a list with elements in reversed order.

*^public fun
FloatArray.reversed(): List<Float> {
    if (isEmpty()) return emptyList()
    val list = toMutableList()
    list.reverse()
    return list
}

* Returns a list with elements in reversed order.

*^public fun
DoubleArray.reversed(): List<Double> {
    if (isEmpty()) return emptyList()
    val list = toMutableList()
    list.reverse()
    return list
}

* Returns a list with elements in reversed order.

*^public fun
BooleanArray.reversed(): List<Boolean> {
    if (isEmpty()) return emptyList()
    val list = toMutableList()
    list.reverse()
    return list
}

* Returns a list with elements in reversed order.

*^public fun
CharArray.reversed(): List<Char> {
    if (isEmpty()) return emptyList()
    val list = toMutableList()
    list.reverse()
    return list
}

* Returns an array with elements of this array in reversed order.

*^public
fun <T> Array<T>.reversedArray(): Array<T> {
    if (isEmpty()) return this
    val result = arrayOfNulls(this,
size)
    val lastIndex = lastIndex
    for (i in 0..lastIndex)
        result[lastIndex - i] = this[i]
    return
result
}

* Returns an array with elements of this array in reversed order.

*^public fun
ByteArray.reversedArray(): ByteArray {
    if (isEmpty()) return this
    val result = ByteArray(size)
    val
lastIndex = lastIndex
    for (i in 0..lastIndex)
        result[lastIndex - i] = this[i]
    return result
}

* Returns an array with elements of this array in reversed order.

*^public fun ShortArray.reversedArray():
ShortArray {
    if (isEmpty()) return this
    val result = ShortArray(size)
    val
lastIndex = lastIndex
    for (i in 0..lastIndex)
        result[lastIndex - i] = this[i]
    return result
}

* Returns an array with elements of this
array in reversed order.

*^public fun IntArray.reversedArray(): IntArray {
    if (isEmpty()) return this
    val
result = IntArray(size)
    val
lastIndex = lastIndex
    for (i in 0..lastIndex)
        result[lastIndex - i] = this[i]
    return result
}

* Returns an array with elements of this array in reversed order.

*^public fun
LongArray.reversedArray(): LongArray {
    if (isEmpty()) return this
    val result = LongArray(size)
    val
lastIndex = lastIndex
    for (i in 0..lastIndex)
        result[lastIndex - i] = this[i]
    return result
}

* Returns an array with elements of this array in reversed order.

*^public fun FloatArray.reversedArray():
FloatArray {
    if (isEmpty()) return this
    val result = FloatArray(size)
    val
lastIndex = lastIndex
    for (i in 0..lastIndex)
        result[lastIndex - i] = this[i]
    return result
}

* Returns an array with elements of this
array in reversed order.

*^public fun DoubleArray.reversedArray(): DoubleArray {
    if (isEmpty()) return
this
    val result = DoubleArray(size)
    val
lastIndex = lastIndex
    for (i in 0..lastIndex)
        result[lastIndex -
i] = this[i]
    return result
}

* Returns an array with elements of this array in reversed order.

*^public
fun BooleanArray.reversedArray(): BooleanArray {
    if (isEmpty()) return this
    val result =
BooleanArray(size)
    val
lastIndex = lastIndex
    for (i in 0..lastIndex)
        result[lastIndex - i] = this[i]
    return result
}

* Returns an array with elements of this array in reversed order.

*^public fun
CharArray.reversedArray(): CharArray {
    if (isEmpty()) return this
    val result = CharArray(size)
    val
lastIndex = lastIndex
    for (i in 0..lastIndex)
        result[lastIndex - i] = this[i]
    return result
}

* Sorts elements in the array in-place according to natural sort order of the value returned by specified [selector]
function.
* The sort is _stable_. It means that equal elements preserve their order relative to each other after
sorting.

*^public inline fun <T, R : Comparable<R>> Array<out T>.sortBy(crossinline selector: (T) -> R?): Unit
{
    if (size > 1) sortWith(compareBy(selector))
}

* Sorts elements in the array in-place descending
according to natural sort order of the value returned by specified [selector] function.
* The sort is _stable_. It
means that equal elements preserve their order relative to each other after sorting.

*^public inline fun <T, R :
Comparable<R>> Array<out T>.sortByDescending(crossinline selector: (T) -> R?): Unit {
    if (size > 1)
sortWith(compareByDescending(selector))
}

* Sorts elements in the array in-place descending according
to their natural sort order.
* The sort is _stable_. It means that equal elements preserve their order relative to
each other after sorting.

*^public fun <T : Comparable<T>> Array<out T>.sortDescending(): Unit {
    sortWith(reverseOrder())
}

* Sorts elements in the array in-place descending according to their natural
sort order.

*^public fun ByteArray.sortDescending(): Unit {
    if (size > 1) {
        sort()
        reverse()
    }
}

```

```

}\n}\n\n/**\n * Sorts elements in the array in-place descending according to their natural sort order.\n */\npublic fun
ShortArray.sortDescending(): Unit {\n if (size > 1) {\n sort()\n reverse()\n }\n}\n\n/**\n * Sorts
elements in the array in-place descending according to their natural sort order.\n */\npublic fun
IntArray.sortDescending(): Unit {\n if (size > 1) {\n sort()\n reverse()\n }\n}\n\n/**\n * Sorts elements
in the array in-place descending according to their natural sort order.\n */\npublic fun LongArray.sortDescending():
Unit {\n if (size > 1) {\n sort()\n reverse()\n }\n}\n\n/**\n * Sorts elements in the array in-place
descending according to their natural sort order.\n */\npublic fun FloatArray.sortDescending(): Unit {\n if (size >
1) {\n sort()\n reverse()\n }\n}\n\n/**\n * Sorts elements in the array in-place descending according to
their natural sort order.\n */\npublic fun DoubleArray.sortDescending(): Unit {\n if (size > 1) {\n sort()\n
reverse()\n }\n}\n\n/**\n * Sorts elements in the array in-place descending according to their natural sort order.\n
*/\npublic fun CharArray.sortDescending(): Unit {\n if (size > 1) {\n sort()\n reverse()\n }\n}\n\n/**\n *
Returns a list of all elements sorted according to their natural sort order.\n * \n * The sort is _stable_. It means that
equal elements preserve their order relative to each other after sorting.\n */\npublic fun <T : Comparable<T>>
Array<out T>.sorted(): List<T> {\n return sortedArray().asList()\n}\n\n/**\n * Returns a list of all elements sorted
according to their natural sort order.\n */\npublic fun ByteArray.sorted(): List<Byte> {\n return
toTypedArray().apply { sort() }.asList()\n}\n\n/**\n * Returns a list of all elements sorted according to their natural
sort order.\n */\npublic fun ShortArray.sorted(): List<Short> {\n return toTypedArray().apply { sort()
}.asList()\n}\n\n/**\n * Returns a list of all elements sorted according to their natural sort order.\n */\npublic fun
IntArray.sorted(): List<Int> {\n return toTypedArray().apply { sort() }.asList()\n}\n\n/**\n * Returns a list of all
elements sorted according to their natural sort order.\n */\npublic fun LongArray.sorted(): List<Long> {\n return
toTypedArray().apply { sort() }.asList()\n}\n\n/**\n * Returns a list of all elements sorted according to their natural
sort order.\n */\npublic fun FloatArray.sorted(): List<Float> {\n return toTypedArray().apply { sort()
}.asList()\n}\n\n/**\n * Returns a list of all elements sorted according to their natural sort order.\n */\npublic fun
DoubleArray.sorted(): List<Double> {\n return toTypedArray().apply { sort() }.asList()\n}\n\n/**\n * Returns a
list of all elements sorted according to their natural sort order.\n */\npublic fun CharArray.sorted(): List<Char> {\n
return toTypedArray().apply { sort() }.asList()\n}\n\n/**\n * Returns an array with all elements of this array sorted
according to their natural sort order.\n * \n * The sort is _stable_. It means that equal elements preserve their order
relative to each other after sorting.\n */\npublic fun <T : Comparable<T>> Array<T>.sortedArray(): Array<T> {\n
if (isEmpty()) return this\n return this.copyOf().apply { sort() }\n}\n\n/**\n * Returns an array with all elements of
this array sorted according to their natural sort order.\n */\npublic fun ByteArray.sortedArray(): ByteArray {\n if
(isEmpty()) return this\n return this.copyOf().apply { sort() }\n}\n\n/**\n * Returns an array with all elements of
this array sorted according to their natural sort order.\n */\npublic fun ShortArray.sortedArray(): ShortArray {\n if
(isEmpty()) return this\n return this.copyOf().apply { sort() }\n}\n\n/**\n * Returns an array with all elements of
this array sorted according to their natural sort order.\n */\npublic fun IntArray.sortedArray(): IntArray {\n if
(isEmpty()) return this\n return this.copyOf().apply { sort() }\n}\n\n/**\n * Returns an array with all elements of
this array sorted according to their natural sort order.\n */\npublic fun LongArray.sortedArray(): LongArray {\n if
(isEmpty()) return this\n return this.copyOf().apply { sort() }\n}\n\n/**\n * Returns an array with all elements of
this array sorted according to their natural sort order.\n */\npublic fun FloatArray.sortedArray(): FloatArray {\n if
(isEmpty()) return this\n return this.copyOf().apply { sort() }\n}\n\n/**\n * Returns an array with all elements of
this array sorted according to their natural sort order.\n */\npublic fun DoubleArray.sortedArray(): DoubleArray {\n
if (isEmpty()) return this\n return this.copyOf().apply { sort() }\n}\n\n/**\n * Returns an array with all elements
of this array sorted according to their natural sort order.\n */\npublic fun CharArray.sortedArray(): CharArray {\n
if (isEmpty()) return this\n return this.copyOf().apply { sort() }\n}\n\n/**\n * Returns an array with all elements of
this array sorted descending according to their natural sort order.\n * \n * The sort is _stable_. It means that equal
elements preserve their order relative to each other after sorting.\n */\npublic fun <T : Comparable<T>>
Array<T>.sortedArrayDescending(): Array<T> {\n if (isEmpty()) return this\n return this.copyOf().apply {
sortWith(reverseOrder()) }\n}\n\n/**\n * Returns an array with all elements of this array sorted descending
according to their natural sort order.\n */\npublic fun ByteArray.sortedArrayDescending(): ByteArray {\n if

```

```

(isEmpty()) return this\n    return this.copyOf().apply { sortDescending() }\n}\n\n/**\n * Returns an array with all
elements of this array sorted descending according to their natural sort order.\n */\npublic fun
ShortArray.sortedArrayDescending(): ShortArray {\n    if (isEmpty()) return this\n    return this.copyOf().apply {
sortDescending() }\n}\n\n/**\n * Returns an array with all elements of this array sorted descending according to
their natural sort order.\n */\npublic fun IntArray.sortedArrayDescending(): IntArray {\n    if (isEmpty()) return
this\n    return this.copyOf().apply { sortDescending() }\n}\n\n/**\n * Returns an array with all elements of this
array sorted descending according to their natural sort order.\n */\npublic fun LongArray.sortedArrayDescending():
LongArray {\n    if (isEmpty()) return this\n    return this.copyOf().apply { sortDescending() }\n}\n\n/**\n * Returns
an array with all elements of this array sorted descending according to their natural sort order.\n */\npublic fun
FloatArray.sortedArrayDescending(): FloatArray {\n    if (isEmpty()) return this\n    return this.copyOf().apply {
sortDescending() }\n}\n\n/**\n * Returns an array with all elements of this array sorted descending according to
their natural sort order.\n */\npublic fun DoubleArray.sortedArrayDescending(): DoubleArray {\n    if (isEmpty())
return this\n    return this.copyOf().apply { sortDescending() }\n}\n\n/**\n * Returns an array with all elements of
this array sorted descending according to their natural sort order.\n */\npublic fun
CharArray.sortedArrayDescending(): CharArray {\n    if (isEmpty()) return this\n    return this.copyOf().apply {
sortDescending() }\n}\n\n/**\n * Returns an array with all elements of this array sorted according the specified
[comparator].\n * \n * The sort is _stable_. It means that equal elements preserve their order relative to each other
after sorting.\n */\npublic fun <T> Array<out T>.sortedArrayWith(comparator: Comparator<in T>): Array<out T>
{\n    if (isEmpty()) return this\n    return this.copyOf().apply { sortWith(comparator) }\n}\n\n/**\n * Returns a list
of all elements sorted according to natural sort order of the value returned by specified [selector] function.\n * \n *
The sort is _stable_. It means that equal elements preserve their order relative to each other after sorting.\n
*/\npublic inline fun <T, R : Comparable<R>> Array<out T>.sortedBy(crossinline selector: (T) -> R?): List<T> {\n
    return sortedWith(compareBy(selector))\n}\n\n/**\n * Returns a list of all elements sorted according to natural sort
order of the value returned by specified [selector] function.\n */\npublic inline fun <R : Comparable<R>>
ByteArray.sortedBy(crossinline selector: (Byte) -> R?): List<Byte> {\n    return
sortedWith(compareBy(selector))\n}\n\n/**\n * Returns a list of all elements sorted according to natural sort order
of the value returned by specified [selector] function.\n */\npublic inline fun <R : Comparable<R>>
ShortArray.sortedBy(crossinline selector: (Short) -> R?): List<Short> {\n    return
sortedWith(compareBy(selector))\n}\n\n/**\n * Returns a list of all elements sorted according to natural sort order
of the value returned by specified [selector] function.\n */\npublic inline fun <R : Comparable<R>>
IntArray.sortedBy(crossinline selector: (Int) -> R?): List<Int> {\n    return
sortedWith(compareBy(selector))\n}\n\n/**\n * Returns a list of all elements sorted according to natural sort order
of the value returned by specified [selector] function.\n */\npublic inline fun <R : Comparable<R>>
LongArray.sortedBy(crossinline selector: (Long) -> R?): List<Long> {\n    return
sortedWith(compareBy(selector))\n}\n\n/**\n * Returns a list of all elements sorted according to natural sort order
of the value returned by specified [selector] function.\n */\npublic inline fun <R : Comparable<R>>
FloatArray.sortedBy(crossinline selector: (Float) -> R?): List<Float> {\n    return
sortedWith(compareBy(selector))\n}\n\n/**\n * Returns a list of all elements sorted according to natural sort order
of the value returned by specified [selector] function.\n */\npublic inline fun <R : Comparable<R>>
DoubleArray.sortedBy(crossinline selector: (Double) -> R?): List<Double> {\n    return
sortedWith(compareBy(selector))\n}\n\n/**\n * Returns a list of all elements sorted according to natural sort order
of the value returned by specified [selector] function.\n */\npublic inline fun <R : Comparable<R>>
BooleanArray.sortedBy(crossinline selector: (Boolean) -> R?): List<Boolean> {\n    return
sortedWith(compareBy(selector))\n}\n\n/**\n * Returns a list of all elements sorted according to natural sort order
of the value returned by specified [selector] function.\n */\npublic inline fun <R : Comparable<R>>
CharArray.sortedBy(crossinline selector: (Char) -> R?): List<Char> {\n    return
sortedWith(compareBy(selector))\n}\n\n/**\n * Returns a list of all elements sorted descending according to natural
sort order of the value returned by specified [selector] function.\n * \n * The sort is _stable_. It means that equal

```



elements preserve their order relative to each other after sorting.

```

public inline fun <T, R : Comparable<R>>
Array<out T>.sortedByDescending(crossinline selector: (T) -> R?): List<T> {
    return
    sortedWith(compareByDescending(selector))
}

```

\* Returns a list of all elements sorted descending according to natural sort order of the value returned by specified [selector] function.

```

public inline fun <R : Comparable<R>>
ByteArray.sortedByDescending(crossinline selector: (Byte) -> R?): List<Byte> {
    return
    sortedWith(compareByDescending(selector))
}

```

\* Returns a list of all elements sorted descending according to natural sort order of the value returned by specified [selector] function.

```

public inline fun <R : Comparable<R>>
ShortArray.sortedByDescending(crossinline selector: (Short) -> R?): List<Short> {
    return
    sortedWith(compareByDescending(selector))
}

```

\* Returns a list of all elements sorted descending according to natural sort order of the value returned by specified [selector] function.

```

public inline fun <R : Comparable<R>>
IntArray.sortedByDescending(crossinline selector: (Int) -> R?): List<Int> {
    return
    sortedWith(compareByDescending(selector))
}

```

\* Returns a list of all elements sorted descending according to natural sort order of the value returned by specified [selector] function.

```

public inline fun <R : Comparable<R>>
LongArray.sortedByDescending(crossinline selector: (Long) -> R?): List<Long> {
    return
    sortedWith(compareByDescending(selector))
}

```

\* Returns a list of all elements sorted descending according to natural sort order of the value returned by specified [selector] function.

```

public inline fun <R : Comparable<R>>
FloatArray.sortedByDescending(crossinline selector: (Float) -> R?): List<Float> {
    return
    sortedWith(compareByDescending(selector))
}

```

\* Returns a list of all elements sorted descending according to natural sort order of the value returned by specified [selector] function.

```

public inline fun <R : Comparable<R>>
DoubleArray.sortedByDescending(crossinline selector: (Double) -> R?): List<Double> {
    return
    sortedWith(compareByDescending(selector))
}

```

\* Returns a list of all elements sorted descending according to natural sort order of the value returned by specified [selector] function.

```

public inline fun <R : Comparable<R>>
BooleanArray.sortedByDescending(crossinline selector: (Boolean) -> R?): List<Boolean> {
    return
    sortedWith(compareByDescending(selector))
}

```

\* Returns a list of all elements sorted descending according to natural sort order of the value returned by specified [selector] function.

```

public inline fun <R : Comparable<R>>
CharArray.sortedByDescending(crossinline selector: (Char) -> R?): List<Char> {
    return
    sortedWith(compareByDescending(selector))
}

```

\* Returns a list of all elements sorted descending according to their natural sort order.

\* The sort is `_stable_`. It means that equal elements preserve their order relative to each other after sorting.

```

public fun <T : Comparable<T>>
Array<out T>.sortedDescending(): List<T> {
    return sortedWith(reverseOrder())
}

```

\* Returns a list of all elements sorted descending according to their natural sort order.

```

public fun ByteArray.sortedDescending(): List<Byte> {
    return copyOf().apply { sort() }.reversed()
}

```

\* Returns a list of all elements sorted descending according to their natural sort order.

```

public fun ShortArray.sortedDescending(): List<Short> {
    return copyOf().apply { sort() }.reversed()
}

```

\* Returns a list of all elements sorted descending according to their natural sort order.

```

public fun IntArray.sortedDescending(): List<Int> {
    return copyOf().apply { sort() }.reversed()
}

```

\* Returns a list of all elements sorted descending according to their natural sort order.

```

public fun LongArray.sortedDescending(): List<Long> {
    return copyOf().apply { sort() }.reversed()
}

```

\* Returns a list of all elements sorted descending according to their natural sort order.

```

public fun FloatArray.sortedDescending(): List<Float> {
    return copyOf().apply { sort() }.reversed()
}

```

\* Returns a list of all elements sorted descending according to their natural sort order.

```

public fun DoubleArray.sortedDescending(): List<Double> {
    return copyOf().apply { sort() }.reversed()
}

```

\* Returns a list of all elements sorted descending according to their natural sort order.

```

public fun CharArray.sortedDescending(): List<Char> {
    return copyOf().apply { sort() }.reversed()
}

```

\* Returns a list of all elements sorted according to the specified [comparator].

\* The sort is `_stable_`. It means that equal elements preserve their order relative to each other after sorting.

```

public fun <T>
Array<out T>.sortedWith(comparator: Comparator<in T>): List<T> {
    return
    sortedArrayWith(comparator).asList()
}

```

\* Returns a list of all elements sorted according to the specified [comparator].

```

public fun ByteArray.sortedWith(comparator: Comparator<in Byte>): List<Byte> {
    return

```

`toArray().apply { sortBy(comparator) }.asList()` Returns a list of all elements sorted according to the specified [comparator].

`ShortArray.sortedWith(comparator: Comparator<in Short>): List<Short>` Returns a list of all elements sorted according to the specified [comparator].

`IntArray.sortedWith(comparator: Comparator<in Int>): List<Int>` Returns a list of all elements sorted according to the specified [comparator].

`LongArray.sortedWith(comparator: Comparator<in Long>): List<Long>` Returns a list of all elements sorted according to the specified [comparator].

`FloatArray.sortedWith(comparator: Comparator<in Float>): List<Float>` Returns a list of all elements sorted according to the specified [comparator].

`DoubleArray.sortedWith(comparator: Comparator<in Double>): List<Double>` Returns a list of all elements sorted according to the specified [comparator].

`BooleanArray.sortedWith(comparator: Comparator<in Boolean>): List<Boolean>` Returns a list of all elements sorted according to the specified [comparator].

`CharArray.sortedWith(comparator: Comparator<in Char>): List<Char>` Returns a [List] that wraps the original array.

`Array<out T>.asList(): List<T>` Returns a [List] that wraps the original array.

`ByteArray.asList(): List<Byte>` Returns a [List] that wraps the original array.

`ShortArray.asList(): List<Short>` Returns a [List] that wraps the original array.

`IntArray.asList(): List<Int>` Returns a [List] that wraps the original array.

`LongArray.asList(): List<Long>` Returns a [List] that wraps the original array.

`FloatArray.asList(): List<Float>` Returns a [List] that wraps the original array.

`DoubleArray.asList(): List<Double>` Returns a [List] that wraps the original array.

`BooleanArray.asList(): List<Boolean>` Returns a [List] that wraps the original array.

`CharArray.asList(): List<Char>` Returns `true` if the two specified arrays are *deeply* equal to one another, i.e. contain the same number of the same elements in the same order. If two corresponding elements are nested arrays, they are also compared deeply. If any of arrays contains itself on any nesting level the behavior is undefined. The elements of other types are compared for equality with the `[equals][Any.equals]` function. For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.

`@SinceKotlin("1.1") public expect infix fun <T> Array<out T>.contentDeepEquals(other: Array<out T>): Boolean` Returns a hash code based on the contents of this array as if it is [List]. Nested arrays are treated as lists too. If any of arrays contains itself on any nesting level the behavior is undefined.

`@SinceKotlin("1.1") public expect fun <T> Array<out T>.contentDeepHashCode(): Int` Returns a string representation of the contents of this array as if it is a [List]. Nested arrays are treated as lists too. If any of arrays contains itself on any nesting level that reference is rendered as `"[...]"` to prevent recursion.

`@sample samples.collections.Arrays.ContentOperations.contentDeepToString`

`@SinceKotlin("1.1") public expect fun <T> Array<out T>.contentDeepToString(): String` Returns `true` if the two specified arrays are *structurally* equal to one another, i.e. contain the same number of the same elements in the same order. The elements are compared for equality with the `[equals][Any.equals]` function. For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.

`@SinceKotlin("1.1") public expect infix fun <T> Array<out T>.contentEquals(other: Array<out T>): Boolean` Returns `true` if the two specified arrays are *structurally* equal to one another, i.e. contain the same number of the same elements in the same order. The elements are compared for equality with the `[equals][Any.equals]` function. For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.

`@SinceKotlin("1.1") public expect infix fun ByteArray.contentEquals(other: ByteArray): Boolean` Returns `true` if the two specified arrays are *structurally* equal to one another, i.e. contain the same number of the same elements in the same order. The elements are compared for equality with the

[equals][Any.equals] function.\n \* For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n \*/\n@SinceKotlin("1.1")\npublic expect infix fun ShortArray.contentEquals(other: ShortArray): Boolean\n\n/\*\*\n \* Returns `true` if the two specified arrays are \*structurally\* equal to one another,\n \* i.e. contain the same number of the same elements in the same order.\n \* \n \* The elements are compared for equality with the [equals][Any.equals] function.\n \* For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n \*/\n@SinceKotlin("1.1")\npublic expect infix fun IntArray.contentEquals(other: IntArray): Boolean\n\n/\*\*\n \* Returns `true` if the two specified arrays are \*structurally\* equal to one another,\n \* i.e. contain the same number of the same elements in the same order.\n \* \n \* The elements are compared for equality with the [equals][Any.equals] function.\n \* For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n \*/\n@SinceKotlin("1.1")\npublic expect infix fun LongArray.contentEquals(other: LongArray): Boolean\n\n/\*\*\n \* Returns `true` if the two specified arrays are \*structurally\* equal to one another,\n \* i.e. contain the same number of the same elements in the same order.\n \* \n \* The elements are compared for equality with the [equals][Any.equals] function.\n \* For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n \*/\n@SinceKotlin("1.1")\npublic expect infix fun FloatArray.contentEquals(other: FloatArray): Boolean\n\n/\*\*\n \* Returns `true` if the two specified arrays are \*structurally\* equal to one another,\n \* i.e. contain the same number of the same elements in the same order.\n \* \n \* The elements are compared for equality with the [equals][Any.equals] function.\n \* For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n \*/\n@SinceKotlin("1.1")\npublic expect infix fun DoubleArray.contentEquals(other: DoubleArray): Boolean\n\n/\*\*\n \* Returns `true` if the two specified arrays are \*structurally\* equal to one another,\n \* i.e. contain the same number of the same elements in the same order.\n \* \n \* The elements are compared for equality with the [equals][Any.equals] function.\n \* For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n \*/\n@SinceKotlin("1.1")\npublic expect infix fun BooleanArray.contentEquals(other: BooleanArray): Boolean\n\n/\*\*\n \* Returns `true` if the two specified arrays are \*structurally\* equal to one another,\n \* i.e. contain the same number of the same elements in the same order.\n \* \n \* The elements are compared for equality with the [equals][Any.equals] function.\n \* For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n \*/\n@SinceKotlin("1.1")\npublic expect infix fun CharArray.contentEquals(other: CharArray): Boolean\n\n/\*\*\n \* Returns a hash code based on the contents of this array as if it is [List].\n \*/\n@SinceKotlin("1.1")\npublic expect fun <T> Array<out T>.contentHashCode(): Int\n\n/\*\*\n \* Returns a hash code based on the contents of this array as if it is [List].\n \*/\n@SinceKotlin("1.1")\npublic expect fun ByteArray.contentHashCode(): Int\n\n/\*\*\n \* Returns a hash code based on the contents of this array as if it is [List].\n \*/\n@SinceKotlin("1.1")\npublic expect fun ShortArray.contentHashCode(): Int\n\n/\*\*\n \* Returns a hash code based on the contents of this array as if it is [List].\n \*/\n@SinceKotlin("1.1")\npublic expect fun IntArray.contentHashCode(): Int\n\n/\*\*\n \* Returns a hash code based on the contents of this array as if it is [List].\n \*/\n@SinceKotlin("1.1")\npublic expect fun LongArray.contentHashCode(): Int\n\n/\*\*\n \* Returns a hash code based on the contents of this array as if it is [List].\n \*/\n@SinceKotlin("1.1")\npublic expect fun FloatArray.contentHashCode(): Int\n\n/\*\*\n \* Returns a hash code based on the contents of this array as if it is [List].\n \*/\n@SinceKotlin("1.1")\npublic expect fun DoubleArray.contentHashCode(): Int\n\n/\*\*\n \* Returns a hash code based on the contents of this array as if it is [List].\n \*/\n@SinceKotlin("1.1")\npublic expect fun BooleanArray.contentHashCode(): Int\n\n/\*\*\n \* Returns a hash code based on the contents of this array as if it is [List].\n \*/\n@SinceKotlin("1.1")\npublic expect fun CharArray.contentHashCode(): Int\n\n/\*\*\n \* Returns a string representation of the contents of the specified array as if it is [List].\n \* \n \* @sample samples.collections.Arrays.ContentOperations.contentToString\n \*/\n@SinceKotlin("1.1")\npublic expect fun <T> Array<out T>.contentToString(): String\n\n/\*\*\n \* Returns a string representation of the contents of the specified array as if it is [List].\n \* \n \* @sample samples.collections.Arrays.ContentOperations.contentToString\n \*/\n@SinceKotlin("1.1")\npublic expect fun ByteArray.contentToString(): String\n\n/\*\*\n \* Returns a string representation of the contents of the specified array as if it is [List].\n \* \n \* @sample samples.collections.Arrays.ContentOperations.contentToString\n \*/\n@SinceKotlin("1.1")\npublic expect fun ShortArray.contentToString(): String\n\n/\*\*\n \* Returns a string

representation of the contents of the specified array as if it is [List].\n \* \n \* @sample  
samples.collections.Arrays.ContentOperations.contentToString\n \*^/\n@SinceKotlin("\n1.1\n")\npublic expect fun  
IntArray.contentToString(): String\n\n/\*\*\n \* Returns a string representation of the contents of the specified array as  
if it is [List].\n \* \n \* @sample samples.collections.Arrays.ContentOperations.contentToString\n  
\*/\n@SinceKotlin("\n1.1\n")\npublic expect fun LongArray.contentToString(): String\n\n/\*\*\n \* Returns a string  
representation of the contents of the specified array as if it is [List].\n \* \n \* @sample  
samples.collections.Arrays.ContentOperations.contentToString\n \*^/\n@SinceKotlin("\n1.1\n")\npublic expect fun  
FloatArray.contentToString(): String\n\n/\*\*\n \* Returns a string representation of the contents of the specified array  
as if it is [List].\n \* \n \* @sample samples.collections.Arrays.ContentOperations.contentToString\n  
\*/\n@SinceKotlin("\n1.1\n")\npublic expect fun DoubleArray.contentToString(): String\n\n/\*\*\n \* Returns a string  
representation of the contents of the specified array as if it is [List].\n \* \n \* @sample  
samples.collections.Arrays.ContentOperations.contentToString\n \*^/\n@SinceKotlin("\n1.1\n")\npublic expect fun  
BooleanArray.contentToString(): String\n\n/\*\*\n \* Returns a string representation of the contents of the specified  
array as if it is [List].\n \* \n \* @sample samples.collections.Arrays.ContentOperations.contentToString\n  
\*/\n@SinceKotlin("\n1.1\n")\npublic expect fun CharArray.contentToString(): String\n\n/\*\*\n \* Copies this array or  
its subrange into the [destination] array and returns that array.\n \* \n \* It's allowed to pass the same array in the  
[destination] and even specify the subrange so that it overlaps with the destination range.\n \* \n \* @param  
destination the array to copy to.\n \* @param destinationOffset the position in the [destination] array to copy to, 0 by  
default.\n \* @param startIndex the beginning (inclusive) of the subrange to copy, 0 by default.\n \* @param  
endIndex the end (exclusive) of the subrange to copy, size of this array by default.\n \* \n \* @throws  
IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this  
array indices or when `startIndex > endIndex`.\n \* @throws IndexOutOfBoundsException when the subrange  
doesn't fit into the [destination] array starting at the specified [destinationOffset],\n \* or when that index is out of the  
[destination] array indices range.\n \* \n \* @return the [destination] array.\n \*/\n@SinceKotlin("\n1.3\n")\npublic  
expect fun <T> Array<out T>.copyInto(destination: Array<T>, destinationOffset: Int = 0, startIndex: Int = 0,  
endIndex: Int = size): Array<T>\n\n/\*\*\n \* Copies this array or its subrange into the [destination] array and returns  
that array.\n \* \n \* It's allowed to pass the same array in the [destination] and even specify the subrange so that it  
overlaps with the destination range.\n \* \n \* @param destination the array to copy to.\n \* @param destinationOffset  
the position in the [destination] array to copy to, 0 by default.\n \* @param startIndex the beginning (inclusive) of  
the subrange to copy, 0 by default.\n \* @param endIndex the end (exclusive) of the subrange to copy, size of this  
array by default.\n \* \n \* @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex]  
or [endIndex] is out of range of this array indices or when `startIndex > endIndex`.\n \* @throws  
IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array starting at the specified  
[destinationOffset],\n \* or when that index is out of the [destination] array indices range.\n \* \n \* @return the  
[destination] array.\n \*/\n@SinceKotlin("\n1.3\n")\npublic expect fun ByteArray.copyInto(destination: ByteArray,  
destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size): ByteArray\n\n/\*\*\n \* Copies this array or its  
subrange into the [destination] array and returns that array.\n \* \n \* It's allowed to pass the same array in the  
[destination] and even specify the subrange so that it overlaps with the destination range.\n \* \n \* @param  
destination the array to copy to.\n \* @param destinationOffset the position in the [destination] array to copy to, 0 by  
default.\n \* @param startIndex the beginning (inclusive) of the subrange to copy, 0 by default.\n \* @param  
endIndex the end (exclusive) of the subrange to copy, size of this array by default.\n \* \n \* @throws  
IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this  
array indices or when `startIndex > endIndex`.\n \* @throws IndexOutOfBoundsException when the subrange  
doesn't fit into the [destination] array starting at the specified [destinationOffset],\n \* or when that index is out of the  
[destination] array indices range.\n \* \n \* @return the [destination] array.\n \*/\n@SinceKotlin("\n1.3\n")\npublic  
expect fun ShortArray.copyInto(destination: ShortArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int  
= size): ShortArray\n\n/\*\*\n \* Copies this array or its subrange into the [destination] array and returns that array.\n \* \n \*  
It's allowed to pass the same array in the [destination] and even specify the subrange so that it overlaps with the

destination range.\n \* \n \* @param destination the array to copy to.\n \* @param destinationOffset the position in the [destination] array to copy to, 0 by default.\n \* @param startIndex the beginning (inclusive) of the subrange to copy, 0 by default.\n \* @param endIndex the end (exclusive) of the subrange to copy, size of this array by default.\n \* \n \* @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this array indices or when `startIndex > endIndex`.\n \* @throws IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array starting at the specified [destinationOffset],\n \* or when that index is out of the [destination] array indices range.\n \* \n \* @return the [destination] array.\n

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*\n@SinceKotlin("1.3")\npublic expect fun IntArray.copyInto(destination: IntArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size): IntArray\n\n/**\n * Copies this array or its subrange into the [destination] array and returns that array.\n * \n * It's allowed to pass the same array in the [destination] and even specify the subrange so that it overlaps with the destination range.\n * \n * @param destination the array to copy to.\n * @param destinationOffset the position in the [destination] array to copy to, 0 by default.\n * @param startIndex the beginning (inclusive) of the subrange to copy, 0 by default.\n * @param endIndex the end (exclusive) of the subrange to copy, size of this array by default.\n * \n * @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this array indices or when `startIndex > endIndex`.\n * @throws IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array starting at the specified [destinationOffset],\n * or when that index is out of the [destination] array indices range.\n * \n * @return the [destination] array.\n *\n@SinceKotlin("1.3")\npublic expect fun
```

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LongArray.copyInto(destination: LongArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size): LongArray\n\n/**\n * Copies this array or its subrange into the [destination] array and returns that array.\n * \n * It's allowed to pass the same array in the [destination] and even specify the subrange so that it overlaps with the destination range.\n * \n * @param destination the array to copy to.\n * @param destinationOffset the position in the [destination] array to copy to, 0 by default.\n * @param startIndex the beginning (inclusive) of the subrange to copy, 0 by default.\n * @param endIndex the end (exclusive) of the subrange to copy, size of this array by default.\n * \n * @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this array indices or when `startIndex > endIndex`.\n * @throws IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array starting at the specified [destinationOffset],\n * or when that index is out of the [destination] array indices range.\n * \n * @return the [destination] array.\n
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*\n@SinceKotlin("1.3")\npublic expect fun FloatArray.copyInto(destination: FloatArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size): FloatArray\n\n/**\n * Copies this array or its subrange into the [destination] array and returns that array.\n * \n * It's allowed to pass the same array in the [destination] and even specify the subrange so that it overlaps with the destination range.\n * \n * @param destination the array to copy to.\n * @param destinationOffset the position in the [destination] array to copy to, 0 by default.\n * @param startIndex the beginning (inclusive) of the subrange to copy, 0 by default.\n * @param endIndex the end (exclusive) of the subrange to copy, size of this array by default.\n * \n * @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this array indices or when `startIndex > endIndex`.\n * @throws IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array starting at the specified [destinationOffset],\n * or when that index is out of the [destination] array indices range.\n * \n * @return the [destination] array.\n *\n@SinceKotlin("1.3")\npublic expect fun
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DoubleArray.copyInto(destination: DoubleArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size): DoubleArray\n\n/**\n * Copies this array or its subrange into the [destination] array and returns that array.\n * \n * It's allowed to pass the same array in the [destination] and even specify the subrange so that it overlaps with the destination range.\n * \n * @param destination the array to copy to.\n * @param destinationOffset the position in the [destination] array to copy to, 0 by default.\n * @param startIndex the beginning (inclusive) of the subrange to copy, 0 by default.\n * @param endIndex the end (exclusive) of the subrange to copy, size of this array by default.\n * \n * @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this array indices or when `startIndex > endIndex`.\n * @throws IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array starting at the specified [destinationOffset],\n * or when that index is
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out of the [destination] array indices range.\n \* \n \* @return the [destination] array.\n

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*\n@SinceKotlin("1.3")\npublic expect fun BooleanArray.copyInto(destination: BooleanArray, destinationOffset:
Int = 0, startIndex: Int = 0, endIndex: Int = size): BooleanArray\n\n/**\n * Copies this array or its subrange into the
[destination] array and returns that array.\n * \n * It's allowed to pass the same array in the [destination] and even
specify the subrange so that it overlaps with the destination range.\n * \n * @param destination the array to copy
to.\n * @param destinationOffset the position in the [destination] array to copy to, 0 by default.\n * @param
startIndex the beginning (inclusive) of the subrange to copy, 0 by default.\n * @param endIndex the end (exclusive)
of the subrange to copy, size of this array by default.\n * \n * @throws IndexOutOfBoundsException or
[IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this array indices or when `startIndex
> endIndex`.\n * @throws IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array
starting at the specified [destinationOffset],\n * or when that index is out of the [destination] array indices range.\n
*\n * @return the [destination] array.\n */\n@SinceKotlin("1.3")\npublic expect fun
CharArray.copyInto(destination: CharArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size):
CharArray\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample
samples.collections.Arrays.CopyOfOperations.copyOfOf\n
*/\n@Suppress("NO_ACTUAL_FOR_EXPECT")\npublic expect fun <T> Array<T>.copyOf():
Array<T>\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample
samples.collections.Arrays.CopyOfOperations.copyOfOf\n */\npublic expect fun ByteArray.copyOf():
ByteArray\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample
samples.collections.Arrays.CopyOfOperations.copyOfOf\n */\npublic expect fun ShortArray.copyOf():
ShortArray\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample
samples.collections.Arrays.CopyOfOperations.copyOfOf\n */\npublic expect fun IntArray.copyOf(): IntArray\n\n/**\n
* Returns new array which is a copy of the original array.\n * \n * @sample
samples.collections.Arrays.CopyOfOperations.copyOfOf\n */\npublic expect fun LongArray.copyOf():
LongArray\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample
samples.collections.Arrays.CopyOfOperations.copyOfOf\n */\npublic expect fun FloatArray.copyOf():
FloatArray\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample
samples.collections.Arrays.CopyOfOperations.copyOfOf\n */\npublic expect fun DoubleArray.copyOf():
DoubleArray\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample
samples.collections.Arrays.CopyOfOperations.copyOfOf\n */\npublic expect fun BooleanArray.copyOf():
BooleanArray\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample
samples.collections.Arrays.CopyOfOperations.copyOfOf\n */\npublic expect fun CharArray.copyOf():
CharArray\n\n/**\n * Returns new array which is a copy of the original array, resized to the given [newSize].\n *
The copy is either truncated or padded at the end with zero values if necessary.\n * \n * - If [newSize] is less than the
size of the original array, the copy array is truncated to the [newSize].\n * - If [newSize] is greater than the size of
the original array, the extra elements in the copy array are filled with zero values.\n * \n * @sample
samples.collections.Arrays.CopyOfOperations.resizedPrimitiveCopyOf\n */\npublic expect fun
ByteArray.copyOf(newSize: Int): ByteArray\n\n/**\n * Returns new array which is a copy of the original array,
resized to the given [newSize].\n * The copy is either truncated or padded at the end with zero values if necessary.\n
*\n * - If [newSize] is less than the size of the original array, the copy array is truncated to the [newSize].\n * - If
[newSize] is greater than the size of the original array, the extra elements in the copy array are filled with zero
values.\n * \n * @sample samples.collections.Arrays.CopyOfOperations.resizedPrimitiveCopyOf\n */\npublic
expect fun ShortArray.copyOf(newSize: Int): ShortArray\n\n/**\n * Returns new array which is a copy of the
original array, resized to the given [newSize].\n * The copy is either truncated or padded at the end with zero values
if necessary.\n * \n * - If [newSize] is less than the size of the original array, the copy array is truncated to the
[newSize].\n * - If [newSize] is greater than the size of the original array, the extra elements in the copy array are
filled with zero values.\n * \n * @sample samples.collections.Arrays.CopyOfOperations.resizedPrimitiveCopyOf\n
*/\npublic expect fun IntArray.copyOf(newSize: Int): IntArray\n\n/**\n * Returns new array which is a copy of the

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expect fun LongArray.copyOfRange(fromIndex: Int, toIndex: Int): LongArray\n\n/\*\*\n \* Returns a new array which is a copy of the specified range of the original array.\n \* \n \* @param fromIndex the start of the range (inclusive), must be in `0..array.size`\n \* @param toIndex the end of the range (exclusive), must be in `fromIndex..array.size`\n \*/\npublic expect fun FloatArray.copyOfRange(fromIndex: Int, toIndex: Int): FloatArray\n\n/\*\*\n \* Returns a new array which is a copy of the specified range of the original array.\n \* \n \* @param fromIndex the start of the range (inclusive), must be in `0..array.size`\n \* @param toIndex the end of the range (exclusive), must be in `fromIndex..array.size`\n \*/\npublic expect fun DoubleArray.copyOfRange(fromIndex: Int, toIndex: Int): DoubleArray\n\n/\*\*\n \* Returns a new array which is a copy of the specified range of the original array.\n \* \n \* @param fromIndex the start of the range (inclusive), must be in `0..array.size`\n \* @param toIndex the end of the range (exclusive), must be in `fromIndex..array.size`\n \*/\npublic expect fun BooleanArray.copyOfRange(fromIndex: Int, toIndex: Int): BooleanArray\n\n/\*\*\n \* Returns a new array which is a copy of the specified range of the original array.\n \* \n \* @param fromIndex the start of the range (inclusive), must be in `0..array.size`\n \* @param toIndex the end of the range (exclusive), must be in `fromIndex..array.size`\n \*/\npublic expect fun CharArray.copyOfRange(fromIndex: Int, toIndex: Int): CharArray\n\n/\*\*\n \* Fills this array or its subrange with the specified [element] value.\n \* \n \* @param fromIndex the start of the range (inclusive), 0 by default.\n \* @param toIndex the end of the range (exclusive), size of this array by default.\n \* @throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this array.\n \* @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n \*/\n@SinceKotlin("1.3")\npublic expect fun <T> Array<T>.fill(element: T, fromIndex: Int = 0, toIndex: Int = size): Unit\n\n/\*\*\n \* Fills this array or its subrange with the specified [element] value.\n \* \n \* @param fromIndex the start of the range (inclusive), 0 by default.\n \* @param toIndex the end of the range (exclusive), size of this array by default.\n \* @throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this array.\n \* @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n \*/\n@SinceKotlin("1.3")\npublic expect fun ByteArray.fill(element: Byte, fromIndex: Int = 0, toIndex: Int = size): Unit\n\n/\*\*\n \* Fills this array or its subrange with the specified [element] value.\n \* \n \* @param fromIndex the start of the range (inclusive), 0 by default.\n \* @param toIndex the end of the range (exclusive), size of this array by default.\n \* @throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this array.\n \* @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n \*/\n@SinceKotlin("1.3")\npublic expect fun ShortArray.fill(element: Short, fromIndex: Int = 0, toIndex: Int = size): Unit\n\n/\*\*\n \* Fills this array or its subrange with the specified [element] value.\n \* \n \* @param fromIndex the start of the range (inclusive), 0 by default.\n \* @param toIndex the end of the range (exclusive), size of this array by default.\n \* @throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this array.\n \* @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n \*/\n@SinceKotlin("1.3")\npublic expect fun IntArray.fill(element: Int, fromIndex: Int = 0, toIndex: Int = size): Unit\n\n/\*\*\n \* Fills this array or its subrange with the specified [element] value.\n \* \n \* @param fromIndex the start of the range (inclusive), 0 by default.\n \* @param toIndex the end of the range (exclusive), size of this array by default.\n \* @throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this array.\n \* @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n \*/\n@SinceKotlin("1.3")\npublic expect fun LongArray.fill(element: Long, fromIndex: Int = 0, toIndex: Int = size): Unit\n\n/\*\*\n \* Fills this array or its subrange with the specified [element] value.\n \* \n \* @param fromIndex the start of the range (inclusive), 0 by default.\n \* @param toIndex the end of the range (exclusive), size of this array by default.\n \* @throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this array.\n \* @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n \*/\n@SinceKotlin("1.3")\npublic expect fun FloatArray.fill(element: Float, fromIndex: Int = 0, toIndex: Int = size): Unit\n\n/\*\*\n \* Fills this array or its subrange with the specified [element] value.\n \* \n \* @param fromIndex the start of the range (inclusive), 0 by default.\n \* @param toIndex the end of the range (exclusive), size of this array by default.\n \* @throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this array.\n \* @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n \*/\n@SinceKotlin("1.3")\npublic



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expect fun DoubleArray.fill(element: Double, fromIndex: Int = 0, toIndex: Int = size): Unit\n\n/**\n * Fills this
array or its subrange with the specified [element] value.\n * \n * @param fromIndex the start of the range
(inclusive), 0 by default.\n * @param toIndex the end of the range (exclusive), size of this array by default.\n * \n *
@throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this
array.\n * @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n
*\n@SinceKotlin("1.3")\npublic expect fun BooleanArray.fill(element: Boolean, fromIndex: Int = 0, toIndex: Int
= size): Unit\n\n/**\n * Fills this array or its subrange with the specified [element] value.\n * \n * @param
fromIndex the start of the range (inclusive), 0 by default.\n * @param toIndex the end of the range (exclusive), size
of this array by default.\n * \n * @throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex]
is greater than the size of this array.\n * @throws IllegalArgumentException if [fromIndex] is greater than
[toIndex].\n *\n@SinceKotlin("1.3")\npublic expect fun CharArray.fill(element: Char, fromIndex: Int = 0,
toIndex: Int = size): Unit\n\n/**\n * Returns the range of valid indices for the array.\n *\npublic val <T> Array<out
T>.indices: IntRange\n    get() = IntRange(0, lastIndex)\n\n/**\n * Returns the range of valid indices for the array.\n
*\npublic val ByteArray.indices: IntRange\n    get() = IntRange(0, lastIndex)\n\n/**\n * Returns the range of valid
indices for the array.\n *\npublic val ShortArray.indices: IntRange\n    get() = IntRange(0, lastIndex)\n\n/**\n *
Returns the range of valid indices for the array.\n *\npublic val IntArray.indices: IntRange\n    get() = IntRange(0,
lastIndex)\n\n/**\n * Returns the range of valid indices for the array.\n *\npublic val LongArray.indices:
IntRange\n    get() = IntRange(0, lastIndex)\n\n/**\n * Returns the range of valid indices for the array.\n *\npublic
val FloatArray.indices: IntRange\n    get() = IntRange(0, lastIndex)\n\n/**\n * Returns the range of valid indices for
the array.\n *\npublic val DoubleArray.indices: IntRange\n    get() = IntRange(0, lastIndex)\n\n/**\n * Returns the
range of valid indices for the array.\n *\npublic val BooleanArray.indices: IntRange\n    get() = IntRange(0,
lastIndex)\n\n/**\n * Returns the range of valid indices for the array.\n *\npublic val CharArray.indices: IntRange\n
    get() = IntRange(0, lastIndex)\n\n/**\n * Returns `true` if the array is empty.\n
*\n@kotlin.internal.InlineOnly\npublic inline fun <T> Array<out T>.isEmpty(): Boolean {\n    return size ==
0\n}\n\n/**\n * Returns `true` if the array is empty.\n *\n@kotlin.internal.InlineOnly\npublic inline fun
ByteArray.isEmpty(): Boolean {\n    return size == 0\n}\n\n/**\n * Returns `true` if the array is empty.\n
*\n@kotlin.internal.InlineOnly\npublic inline fun ShortArray.isEmpty(): Boolean {\n    return size == 0\n}\n\n/**\n
 * Returns `true` if the array is empty.\n *\n@kotlin.internal.InlineOnly\npublic inline fun IntArray.isEmpty():
Boolean {\n    return size == 0\n}\n\n/**\n * Returns `true` if the array is empty.\n
*\n@kotlin.internal.InlineOnly\npublic inline fun LongArray.isEmpty(): Boolean {\n    return size == 0\n}\n\n/**\n
 * Returns `true` if the array is empty.\n *\n@kotlin.internal.InlineOnly\npublic inline fun FloatArray.isEmpty():
Boolean {\n    return size == 0\n}\n\n/**\n * Returns `true` if the array is empty.\n
*\n@kotlin.internal.InlineOnly\npublic inline fun DoubleArray.isEmpty(): Boolean {\n    return size ==
0\n}\n\n/**\n * Returns `true` if the array is empty.\n *\n@kotlin.internal.InlineOnly\npublic inline fun
BooleanArray.isEmpty(): Boolean {\n    return size == 0\n}\n\n/**\n * Returns `true` if the array is empty.\n
*\n@kotlin.internal.InlineOnly\npublic inline fun CharArray.isEmpty(): Boolean {\n    return size == 0\n}\n\n/**\n
 * Returns `true` if the array is not empty.\n *\n@kotlin.internal.InlineOnly\npublic inline fun <T> Array<out
T>.isNotEmpty(): Boolean {\n    return !isEmpty()\n}\n\n/**\n * Returns `true` if the array is not empty.\n
*\n@kotlin.internal.InlineOnly\npublic inline fun ByteArray.isNotEmpty(): Boolean {\n    return
!isEmpty()\n}\n\n/**\n * Returns `true` if the array is not empty.\n *\n@kotlin.internal.InlineOnly\npublic inline
fun ShortArray.isNotEmpty(): Boolean {\n    return !isEmpty()\n}\n\n/**\n * Returns `true` if the array is not
empty.\n *\n@kotlin.internal.InlineOnly\npublic inline fun IntArray.isNotEmpty(): Boolean {\n    return
!isEmpty()\n}\n\n/**\n * Returns `true` if the array is not empty.\n *\n@kotlin.internal.InlineOnly\npublic inline
fun LongArray.isNotEmpty(): Boolean {\n    return !isEmpty()\n}\n\n/**\n * Returns `true` if the array is not
empty.\n *\n@kotlin.internal.InlineOnly\npublic inline fun FloatArray.isNotEmpty(): Boolean {\n    return
!isEmpty()\n}\n\n/**\n * Returns `true` if the array is not empty.\n *\n@kotlin.internal.InlineOnly\npublic inline
fun DoubleArray.isNotEmpty(): Boolean {\n    return !isEmpty()\n}\n\n/**\n * Returns `true` if the array is not
empty.\n *\n@kotlin.internal.InlineOnly\npublic inline fun BooleanArray.isNotEmpty(): Boolean {\n    return

```

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isEmpty()\n\n**\n * Returns `true` if the array is not empty.\n *\n@kotlin.internal.InlineOnly\npublic inline
fun CharArray.isNotEmpty(): Boolean {\n    return !isEmpty()\n}\n\n**\n * Returns the last valid index for the
array.\n *\npublic val <T> Array<out T>.lastIndex: Int\n    get() = size - 1\n\n**\n * Returns the last valid index
for the array.\n *\npublic val ByteArray.lastIndex: Int\n    get() = size - 1\n\n**\n * Returns the last valid index for
the array.\n *\npublic val ShortArray.lastIndex: Int\n    get() = size - 1\n\n**\n * Returns the last valid index for the
array.\n *\npublic val IntArray.lastIndex: Int\n    get() = size - 1\n\n**\n * Returns the last valid index for the
array.\n *\npublic val LongArray.lastIndex: Int\n    get() = size - 1\n\n**\n * Returns the last valid index for the
array.\n *\npublic val FloatArray.lastIndex: Int\n    get() = size - 1\n\n**\n * Returns the last valid index for the
array.\n *\npublic val DoubleArray.lastIndex: Int\n    get() = size - 1\n\n**\n * Returns the last valid index for the
array.\n *\npublic val BooleanArray.lastIndex: Int\n    get() = size - 1\n\n**\n * Returns the last valid index for the
array.\n *\npublic val CharArray.lastIndex: Int\n    get() = size - 1\n\n**\n * Returns an array containing all
elements of the original array and then the given [element].\n
*\n@Suppress("NO_ACTUAL_FOR_EXPECT")\npublic expect operator fun <T> Array<T>.plus(element: T):
Array<T>\n\n**\n * Returns an array containing all elements of the original array and then the given [element].\n
*\npublic expect operator fun ByteArray.plus(element: Byte): ByteArray\n\n**\n * Returns an array containing all
elements of the original array and then the given [element].\n *\npublic expect operator fun
ShortArray.plus(element: Short): ShortArray\n\n**\n * Returns an array containing all elements of the original
array and then the given [element].\n *\npublic expect operator fun IntArray.plus(element: Int): IntArray\n\n**\n *
Returns an array containing all elements of the original array and then the given [element].\n *\npublic expect
operator fun LongArray.plus(element: Long): LongArray\n\n**\n * Returns an array containing all elements of the
original array and then the given [element].\n *\npublic expect operator fun FloatArray.plus(element: Float):
FloatArray\n\n**\n * Returns an array containing all elements of the original array and then the given [element].\n
*\npublic expect operator fun DoubleArray.plus(element: Double): DoubleArray\n\n**\n * Returns an array
containing all elements of the original array and then the given [element].\n *\npublic expect operator fun
BooleanArray.plus(element: Boolean): BooleanArray\n\n**\n * Returns an array containing all elements of the
original array and then the given [element].\n *\npublic expect operator fun CharArray.plus(element: Char):
CharArray\n\n**\n * Returns an array containing all elements of the original array and then all elements of the
given [elements] collection.\n *\n@Suppress("NO_ACTUAL_FOR_EXPECT")\npublic expect operator fun <T>
Array<T>.plus(elements: Collection<T>): Array<T>\n\n**\n * Returns an array containing all elements of the
original array and then all elements of the given [elements] collection.\n *\npublic expect operator fun
ByteArray.plus(elements: Collection<Byte>): ByteArray\n\n**\n * Returns an array containing all elements of the
original array and then all elements of the given [elements] collection.\n *\npublic expect operator fun
ShortArray.plus(elements: Collection<Short>): ShortArray\n\n**\n * Returns an array containing all elements of
the original array and then all elements of the given [elements] collection.\n *\npublic expect operator fun
IntArray.plus(elements: Collection<Int>): IntArray\n\n**\n * Returns an array containing all elements of the
original array and then all elements of the given [elements] collection.\n *\npublic expect operator fun
LongArray.plus(elements: Collection<Long>): LongArray\n\n**\n * Returns an array containing all elements of the
original array and then all elements of the given [elements] collection.\n *\npublic expect operator fun
FloatArray.plus(elements: Collection<Float>): FloatArray\n\n**\n * Returns an array containing all elements of the
original array and then all elements of the given [elements] collection.\n *\npublic expect operator fun
DoubleArray.plus(elements: Collection<Double>): DoubleArray\n\n**\n * Returns an array containing all elements
of the original array and then all elements of the given [elements] collection.\n *\npublic expect operator fun
BooleanArray.plus(elements: Collection<Boolean>): BooleanArray\n\n**\n * Returns an array containing all
elements of the original array and then all elements of the given [elements] collection.\n *\npublic expect operator
fun CharArray.plus(elements: Collection<Char>): CharArray\n\n**\n * Returns an array containing all elements of
the original array and then all elements of the given [elements] array.\n
*\n@Suppress("NO_ACTUAL_FOR_EXPECT")\npublic expect operator fun <T> Array<T>.plus(elements:
Array<out T>): Array<T>\n\n**\n * Returns an array containing all elements of the original array and then all

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elements of the given [elements] array.\n \*/\npublic expect operator fun ByteArray.plus(elements: ByteArray): ByteArray\n\n\*/\n \* Returns an array containing all elements of the original array and then all elements of the given [elements] array.\n \*/\npublic expect operator fun ShortArray.plus(elements: ShortArray): ShortArray\n\n\*/\n \* Returns an array containing all elements of the original array and then all elements of the given [elements] array.\n \*/\npublic expect operator fun IntArray.plus(elements: IntArray): IntArray\n\n\*/\n \* Returns an array containing all elements of the original array and then all elements of the given [elements] array.\n \*/\npublic expect operator fun LongArray.plus(elements: LongArray): LongArray\n\n\*/\n \* Returns an array containing all elements of the original array and then all elements of the given [elements] array.\n \*/\npublic expect operator fun FloatArray.plus(elements: FloatArray): FloatArray\n\n\*/\n \* Returns an array containing all elements of the original array and then all elements of the given [elements] array.\n \*/\npublic expect operator fun DoubleArray.plus(elements: DoubleArray): DoubleArray\n\n\*/\n \* Returns an array containing all elements of the original array and then all elements of the given [elements] array.\n \*/\npublic expect operator fun BooleanArray.plus(elements: BooleanArray): BooleanArray\n\n\*/\n \* Returns an array containing all elements of the original array and then all elements of the given [elements] array.\n \*/\npublic expect operator fun CharArray.plus(elements: CharArray): CharArray\n\n\*/\n \* Returns an array containing all elements of the original array and then the given [element].\n \*/\n@Suppress("NO\_ACTUAL\_FOR\_EXPECT")\npublic expect fun <T> Array<T>.plusElement(element: T): Array<T>\n\n\*/\n \* Sorts the array in-place.\n \* \n \* @sample samples.collections.Arrays.Sorting.sortArray\n \*/\npublic expect fun IntArray.sort(): Unit\n\n\*/\n \* Sorts the array in-place.\n \* \n \* @sample samples.collections.Arrays.Sorting.sortArray\n \*/\npublic expect fun LongArray.sort(): Unit\n\n\*/\n \* Sorts the array in-place.\n \* \n \* @sample samples.collections.Arrays.Sorting.sortArray\n \*/\npublic expect fun ByteArray.sort(): Unit\n\n\*/\n \* Sorts the array in-place.\n \* \n \* @sample samples.collections.Arrays.Sorting.sortArray\n \*/\npublic expect fun ShortArray.sort(): Unit\n\n\*/\n \* Sorts the array in-place.\n \* \n \* @sample samples.collections.Arrays.Sorting.sortArray\n \*/\npublic expect fun DoubleArray.sort(): Unit\n\n\*/\n \* Sorts the array in-place.\n \* \n \* @sample samples.collections.Arrays.Sorting.sortArray\n \*/\npublic expect fun FloatArray.sort(): Unit\n\n\*/\n \* Sorts the array in-place.\n \* \n \* @sample samples.collections.Arrays.Sorting.sortArray\n \*/\npublic expect fun CharArray.sort(): Unit\n\n\*/\n \* Sorts the array in-place according to the natural order of its elements.\n \* \n \* The sort is `_stable_`. It means that equal elements preserve their order relative to each other after sorting.\n \* \n \* @sample samples.collections.Arrays.Sorting.sortArrayOfComparable\n \*/\npublic expect fun <T> Comparable<T>> Array<out T>.sort(): Unit\n\n\*/\n \* Sorts the array in-place according to the order specified by the given [comparator].\n \* \n \* The sort is `_stable_`. It means that equal elements preserve their order relative to each other after sorting.\n \*/\npublic expect fun <T> Array<out T>.sortWith(comparator: Comparator<in T>): Unit\n\n\*/\n \* Returns an array of Boolean containing all of the elements of this generic array.\n \*/\npublic fun Array<out Boolean>.toBooleanArray(): BooleanArray {\n return BooleanArray(size) { index -> this[index] }\n}\n\n\*/\n \* Returns an array of Byte containing all of the elements of this generic array.\n \*/\npublic fun Array<out Byte>.toByteArray(): ByteArray {\n return ByteArray(size) { index -> this[index] }\n}\n\n\*/\n \* Returns an array of Char containing all of the elements of this generic array.\n \*/\npublic fun Array<out Char>.toCharArray(): CharArray {\n return CharArray(size) { index -> this[index] }\n}\n\n\*/\n \* Returns an array of Double containing all of the elements of this generic array.\n \*/\npublic fun Array<out Double>.toDoubleArray(): DoubleArray {\n return DoubleArray(size) { index -> this[index] }\n}\n\n\*/\n \* Returns an array of Float containing all of the elements of this generic array.\n \*/\npublic fun Array<out Float>.toFloatArray(): FloatArray {\n return FloatArray(size) { index -> this[index] }\n}\n\n\*/\n \* Returns an array of Int containing all of the elements of this generic array.\n \*/\npublic fun Array<out Int>.toIntArray(): IntArray {\n return IntArray(size) { index -> this[index] }\n}\n\n\*/\n \* Returns an array of Long containing all of the elements of this generic array.\n \*/\npublic fun Array<out Long>.toLongArray(): LongArray {\n return LongArray(size) { index -> this[index] }\n}\n\n\*/\n \* Returns an array of Short containing all of the elements of this generic array.\n \*/\npublic fun Array<out Short>.toShortArray(): ShortArray {\n return ShortArray(size) { index -> this[index] }\n}\n\n\*/\n \* Returns a `*typed*` object array containing all of the elements of this primitive

array.  
`public expect fun ByteArray.toTypedArray(): Array<Byte>`  
Returns a *typed* object array containing all of the elements of this primitive array.  
`public expect fun ShortArray.toTypedArray(): Array<Short>`  
Returns a *typed* object array containing all of the elements of this primitive array.  
`public expect fun IntArray.toTypedArray(): Array<Int>`  
Returns a *typed* object array containing all of the elements of this primitive array.  
`public expect fun LongArray.toTypedArray(): Array<Long>`  
Returns a *typed* object array containing all of the elements of this primitive array.  
`public expect fun FloatArray.toTypedArray(): Array<Float>`  
Returns a *typed* object array containing all of the elements of this primitive array.  
`public expect fun DoubleArray.toTypedArray(): Array<Double>`  
Returns a *typed* object array containing all of the elements of this primitive array.  
`public expect fun BooleanArray.toTypedArray(): Array<Boolean>`  
Returns a *typed* object array containing all of the elements of this primitive array.  
`public expect fun CharArray.toTypedArray(): Array<Char>`  
Returns a [Map] containing key-value pairs provided by [transform] function applied to elements of the given array.  
If any of two pairs would have the same key the last one gets added to the map.  
The returned map preserves the entry iteration order of the original array.  
@sample  
samples.collections.Arrays.Transformations.associateArrayOfPrimitives  
`public inline fun <T, K, V> Array<out T>.associate(transform: (T) -> Pair<K, V>): Map<K, V>`  
{  
val capacity = mapCapacity(size).coerceAtLeast(16)  
return associateTo(LinkedHashMap<K, V>(capacity), transform)  
}  
Returns a [Map] containing key-value pairs provided by [transform] function applied to elements of the given array.  
If any of two pairs would have the same key the last one gets added to the map.  
The returned map preserves the entry iteration order of the original array.  
@sample  
samples.collections.Arrays.Transformations.associateArrayOfPrimitives  
`public inline fun <K, V> ByteArray.associate(transform: (Byte) -> Pair<K, V>): Map<K, V>`  
{  
val capacity = mapCapacity(size).coerceAtLeast(16)  
return associateTo(LinkedHashMap<K, V>(capacity), transform)  
}  
Returns a [Map] containing key-value pairs provided by [transform] function applied to elements of the given array.  
If any of two pairs would have the same key the last one gets added to the map.  
The returned map preserves the entry iteration order of the original array.  
@sample  
samples.collections.Arrays.Transformations.associateArrayOfPrimitives  
`public inline fun <K, V> ShortArray.associate(transform: (Short) -> Pair<K, V>): Map<K, V>`  
{  
val capacity = mapCapacity(size).coerceAtLeast(16)  
return associateTo(LinkedHashMap<K, V>(capacity), transform)  
}  
Returns a [Map] containing key-value pairs provided by [transform] function applied to elements of the given array.  
If any of two pairs would have the same key the last one gets added to the map.  
The returned map preserves the entry iteration order of the original array.  
@sample  
samples.collections.Arrays.Transformations.associateArrayOfPrimitives  
`public inline fun <K, V> IntArray.associate(transform: (Int) -> Pair<K, V>): Map<K, V>`  
{  
val capacity = mapCapacity(size).coerceAtLeast(16)  
return associateTo(LinkedHashMap<K, V>(capacity), transform)  
}  
Returns a [Map] containing key-value pairs provided by [transform] function applied to elements of the given array.  
If any of two pairs would have the same key the last one gets added to the map.  
The returned map preserves the entry iteration order of the original array.  
@sample  
samples.collections.Arrays.Transformations.associateArrayOfPrimitives  
`public inline fun <K, V> LongArray.associate(transform: (Long) -> Pair<K, V>): Map<K, V>`  
{  
val capacity = mapCapacity(size).coerceAtLeast(16)  
return associateTo(LinkedHashMap<K, V>(capacity), transform)  
}  
Returns a [Map] containing key-value pairs provided by [transform] function applied to elements of the given array.  
If any of two pairs would have the same key the last one gets added to the map.  
The returned map preserves the entry iteration order of the original array.  
@sample  
samples.collections.Arrays.Transformations.associateArrayOfPrimitives  
`public inline fun <K, V> FloatArray.associate(transform: (Float) -> Pair<K, V>): Map<K, V>`  
{  
val capacity = mapCapacity(size).coerceAtLeast(16)  
return associateTo(LinkedHashMap<K, V>(capacity), transform)  
}  
Returns a [Map] containing key-value pairs provided by [transform] function applied to

elements of the given array.  
 \* If any of two pairs would have the same key the last one gets added to the map.  
 \* The returned map preserves the entry iteration order of the original array.  
 \* @sample  
 samples.collections.Arrays.Transformations.associateArrayOfPrimitives  
 \*  
 public inline fun <K, V>  
 DoubleArray.associate(transform: (Double) -> Pair<K, V>): Map<K, V> {  
 val capacity =  
 mapCapacity(size).coerceAtLeast(16)  
 return associateTo(LinkedHashMap<K, V>(capacity),  
 transform)  
 }  
 \* Returns a [Map] containing key-value pairs provided by [transform] function  
 \* applied to  
 elements of the given array.  
 \* If any of two pairs would have the same key the last one gets added to the  
 map.  
 \* The returned map preserves the entry iteration order of the original array.  
 \* @sample  
 samples.collections.Arrays.Transformations.associateArrayOfPrimitives  
 \*  
 public inline fun <K, V>  
 BooleanArray.associate(transform: (Boolean) -> Pair<K, V>): Map<K, V> {  
 val capacity =  
 mapCapacity(size).coerceAtLeast(16)  
 return associateTo(LinkedHashMap<K, V>(capacity),  
 transform)  
 }  
 \* Returns a [Map] containing key-value pairs provided by [transform] function  
 \* applied to  
 elements of the given array.  
 \* If any of two pairs would have the same key the last one gets added to the  
 map.  
 \* The returned map preserves the entry iteration order of the original array.  
 \* @sample  
 samples.collections.Arrays.Transformations.associateArrayOfPrimitives  
 \*  
 public inline fun <K, V>  
 CharArray.associate(transform: (Char) -> Pair<K, V>): Map<K, V> {  
 val capacity =  
 mapCapacity(size).coerceAtLeast(16)  
 return associateTo(LinkedHashMap<K, V>(capacity),  
 transform)  
 }  
 \* Returns a [Map] containing the elements from the given array indexed by the key  
 \* returned from [keySelector] function applied to each element.  
 \* If any two elements would have the same key  
 \* returned by [keySelector] the last one gets added to the map.  
 \* The returned map preserves the entry iteration  
 order of the original array.  
 \* @sample  
 samples.collections.Arrays.Transformations.associateArrayOfPrimitivesBy  
 \*  
 public inline fun <T, K>  
 Array<out T>.associateBy(keySelector: (T) -> K): Map<K, T> {  
 val capacity =  
 mapCapacity(size).coerceAtLeast(16)  
 return associateByTo(LinkedHashMap<K, T>(capacity),  
 keySelector)  
 }  
 \* Returns a [Map] containing the elements from the given array indexed by the key  
 \* returned from [keySelector] function applied to each element.  
 \* If any two elements would have the same key  
 \* returned by [keySelector] the last one gets added to the map.  
 \* The returned map preserves the entry iteration  
 order of the original array.  
 \* @sample  
 samples.collections.Arrays.Transformations.associateArrayOfPrimitivesBy  
 \*  
 public inline fun <K>  
 ByteArray.associateBy(keySelector: (Byte) -> K): Map<K, Byte> {  
 val capacity =  
 mapCapacity(size).coerceAtLeast(16)  
 return associateByTo(LinkedHashMap<K, Byte>(capacity),  
 keySelector)  
 }  
 \* Returns a [Map] containing the elements from the given array indexed by the key  
 \* returned from [keySelector] function applied to each element.  
 \* If any two elements would have the same key  
 \* returned by [keySelector] the last one gets added to the map.  
 \* The returned map preserves the entry iteration  
 order of the original array.  
 \* @sample  
 samples.collections.Arrays.Transformations.associateArrayOfPrimitivesBy  
 \*  
 public inline fun <K>  
 ShortArray.associateBy(keySelector: (Short) -> K): Map<K, Short> {  
 val capacity =  
 mapCapacity(size).coerceAtLeast(16)  
 return associateByTo(LinkedHashMap<K, Short>(capacity),  
 keySelector)  
 }  
 \* Returns a [Map] containing the elements from the given array indexed by the key  
 \* returned from [keySelector] function applied to each element.  
 \* If any two elements would have the same key  
 \* returned by [keySelector] the last one gets added to the map.  
 \* The returned map preserves the entry iteration  
 order of the original array.  
 \* @sample  
 samples.collections.Arrays.Transformations.associateArrayOfPrimitivesBy  
 \*  
 public inline fun <K>  
 IntArray.associateBy(keySelector: (Int) -> K): Map<K, Int> {  
 val capacity =  
 mapCapacity(size).coerceAtLeast(16)  
 return associateByTo(LinkedHashMap<K, Int>(capacity),  
 keySelector)  
 }  
 \* Returns a [Map] containing the elements from the given array indexed by the key  
 \* returned from [keySelector] function applied to each element.  
 \* If any two elements would have the same key  
 \* returned by [keySelector] the last one gets added to the map.  
 \* The returned map preserves the entry iteration

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order of the original array.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesBy\n */\npublic inline fun <K>
LongArray.associateBy(keySelector: (Long) -> K): Map<K, Long> {\n    val capacity =
mapCapacity(size).coerceAtLeast(16)\n    return associateByTo(LinkedHashMap<K, Long>(capacity),
keySelector)\n}\n\n/**\n * Returns a [Map] containing the elements from the given array indexed by the key\n *
returned from [keySelector] function applied to each element.\n * \n * If any two elements would have the same key
returned by [keySelector] the last one gets added to the map.\n * \n * The returned map preserves the entry iteration
order of the original array.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesBy\n */\npublic inline fun <K>
FloatArray.associateBy(keySelector: (Float) -> K): Map<K, Float> {\n    val capacity =
mapCapacity(size).coerceAtLeast(16)\n    return associateByTo(LinkedHashMap<K, Float>(capacity),
keySelector)\n}\n\n/**\n * Returns a [Map] containing the elements from the given array indexed by the key\n *
returned from [keySelector] function applied to each element.\n * \n * If any two elements would have the same key
returned by [keySelector] the last one gets added to the map.\n * \n * The returned map preserves the entry iteration
order of the original array.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesBy\n */\npublic inline fun <K>
DoubleArray.associateBy(keySelector: (Double) -> K): Map<K, Double> {\n    val capacity =
mapCapacity(size).coerceAtLeast(16)\n    return associateByTo(LinkedHashMap<K, Double>(capacity),
keySelector)\n}\n\n/**\n * Returns a [Map] containing the elements from the given array indexed by the key\n *
returned from [keySelector] function applied to each element.\n * \n * If any two elements would have the same key
returned by [keySelector] the last one gets added to the map.\n * \n * The returned map preserves the entry iteration
order of the original array.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesBy\n */\npublic inline fun <K>
BooleanArray.associateBy(keySelector: (Boolean) -> K): Map<K, Boolean> {\n    val capacity =
mapCapacity(size).coerceAtLeast(16)\n    return associateByTo(LinkedHashMap<K, Boolean>(capacity),
keySelector)\n}\n\n/**\n * Returns a [Map] containing the elements from the given array indexed by the key\n *
returned from [keySelector] function applied to each element.\n * \n * If any two elements would have the same key
returned by [keySelector] the last one gets added to the map.\n * \n * The returned map preserves the entry iteration
order of the original array.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesBy\n */\npublic inline fun <K>
CharArray.associateBy(keySelector: (Char) -> K): Map<K, Char> {\n    val capacity =
mapCapacity(size).coerceAtLeast(16)\n    return associateByTo(LinkedHashMap<K, Char>(capacity),
keySelector)\n}\n\n/**\n * Returns a [Map] containing the values provided by [valueTransform] and indexed by
[keySelector] functions applied to elements of the given array.\n * \n * If any two elements would have the same key
returned by [keySelector] the last one gets added to the map.\n * \n * The returned map preserves the entry iteration
order of the original array.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByWithValueTransform\n */\npublic inline
fun <T, K, V> Array<out T>.associateBy(keySelector: (T) -> K, valueTransform: (T) -> V): Map<K, V> {\n    val
capacity = mapCapacity(size).coerceAtLeast(16)\n    return associateByTo(LinkedHashMap<K, V>(capacity),
keySelector, valueTransform)\n}\n\n/**\n * Returns a [Map] containing the values provided by [valueTransform]
and indexed by [keySelector] functions applied to elements of the given array.\n * \n * If any two elements would
have the same key returned by [keySelector] the last one gets added to the map.\n * \n * The returned map preserves
the entry iteration order of the original array.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByWithValueTransform\n */\npublic inline
fun <K, V> ByteArray.associateBy(keySelector: (Byte) -> K, valueTransform: (Byte) -> V): Map<K, V> {\n    val
capacity = mapCapacity(size).coerceAtLeast(16)\n    return associateByTo(LinkedHashMap<K, V>(capacity),
keySelector, valueTransform)\n}\n\n/**\n * Returns a [Map] containing the values provided by [valueTransform]
and indexed by [keySelector] functions applied to elements of the given array.\n * \n * If any two elements would
have the same key returned by [keySelector] the last one gets added to the map.\n * \n * The returned map preserves
the entry iteration order of the original array.\n * \n * @sample

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have the same key returned by [keySelector] the last one gets added to the map.\n \* \n \* The returned map preserves the entry iteration order of the original array.\n \* \n \* @sample

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samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByWithValueTransform\n *\npublic inline
fun <K, V> ShortArray.associateBy(keySelector: (Short) -> K, valueTransform: (Short) -> V): Map<K, V> {\n
val capacity = mapCapacity(size).coerceAtLeast(16)\n return associateByTo(LinkedHashMap<K, V>(capacity),
keySelector, valueTransform)\n}\n\n/**\n * Returns a [Map] containing the values provided by [valueTransform]
and indexed by [keySelector] functions applied to elements of the given array.\n * \n * If any two elements would
have the same key returned by [keySelector] the last one gets added to the map.\n * \n * The returned map preserves
the entry iteration order of the original array.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByWithValueTransform\n *\npublic inline
fun <K, V> IntArray.associateBy(keySelector: (Int) -> K, valueTransform: (Int) -> V): Map<K, V> {\n val
capacity = mapCapacity(size).coerceAtLeast(16)\n return associateByTo(LinkedHashMap<K, V>(capacity),
keySelector, valueTransform)\n}\n\n/**\n * Returns a [Map] containing the values provided by [valueTransform]
and indexed by [keySelector] functions applied to elements of the given array.\n * \n * If any two elements would
have the same key returned by [keySelector] the last one gets added to the map.\n * \n * The returned map preserves
the entry iteration order of the original array.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByWithValueTransform\n *\npublic inline
fun <K, V> LongArray.associateBy(keySelector: (Long) -> K, valueTransform: (Long) -> V): Map<K, V> {\n val
capacity = mapCapacity(size).coerceAtLeast(16)\n return associateByTo(LinkedHashMap<K, V>(capacity),
keySelector, valueTransform)\n}\n\n/**\n * Returns a [Map] containing the values provided by [valueTransform]
and indexed by [keySelector] functions applied to elements of the given array.\n * \n * If any two elements would
have the same key returned by [keySelector] the last one gets added to the map.\n * \n * The returned map preserves
the entry iteration order of the original array.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByWithValueTransform\n *\npublic inline
fun <K, V> FloatArray.associateBy(keySelector: (Float) -> K, valueTransform: (Float) -> V): Map<K, V> {\n val
capacity = mapCapacity(size).coerceAtLeast(16)\n return associateByTo(LinkedHashMap<K, V>(capacity),
keySelector, valueTransform)\n}\n\n/**\n * Returns a [Map] containing the values provided by [valueTransform]
and indexed by [keySelector] functions applied to elements of the given array.\n * \n * If any two elements would
have the same key returned by [keySelector] the last one gets added to the map.\n * \n * The returned map preserves
the entry iteration order of the original array.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByWithValueTransform\n *\npublic inline
fun <K, V> DoubleArray.associateBy(keySelector: (Double) -> K, valueTransform: (Double) -> V): Map<K, V>
{\n val capacity = mapCapacity(size).coerceAtLeast(16)\n return associateByTo(LinkedHashMap<K,
V>(capacity), keySelector, valueTransform)\n}\n\n/**\n * Returns a [Map] containing the values provided by
[valueTransform] and indexed by [keySelector] functions applied to elements of the given array.\n * \n * If any two
elements would have the same key returned by [keySelector] the last one gets added to the map.\n * \n * The
returned map preserves the entry iteration order of the original array.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByWithValueTransform\n *\npublic inline
fun <K, V> BooleanArray.associateBy(keySelector: (Boolean) -> K, valueTransform: (Boolean) -> V): Map<K, V>
{\n val capacity = mapCapacity(size).coerceAtLeast(16)\n return associateByTo(LinkedHashMap<K,
V>(capacity), keySelector, valueTransform)\n}\n\n/**\n * Returns a [Map] containing the values provided by
[valueTransform] and indexed by [keySelector] functions applied to elements of the given array.\n * \n * If any two
elements would have the same key returned by [keySelector] the last one gets added to the map.\n * \n * The
returned map preserves the entry iteration order of the original array.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByWithValueTransform\n *\npublic inline
fun <K, V> CharArray.associateBy(keySelector: (Char) -> K, valueTransform: (Char) -> V): Map<K, V> {\n val
capacity = mapCapacity(size).coerceAtLeast(16)\n return associateByTo(LinkedHashMap<K, V>(capacity),
keySelector, valueTransform)\n}\n\n/**\n * Populates and returns the [destination] mutable map with key-value

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pairs,\n \* where key is provided by the [keySelector] function applied to each element of the given array\n \* and value is the element itself.\n \* \n \* If any two elements would have the same key returned by [keySelector] the last one gets added to the map.\n \* \n \* @sample

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samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByTo\n *\npublic inline fun <T, K, M :  
MutableMap<in K, in T>> Array<out T>.associateByTo(destination: M, keySelector: (T) -> K): M {\n for  
(element in this) {\n destination.put(keySelector(element), element)\n }\n return destination\n}\n\n/n/**\n * Populates and returns the [destination] mutable map with key-value pairs,\n * where key is provided by the  
[keySelector] function applied to each element of the given array\n * and value is the element itself.\n * \n * If any  
two elements would have the same key returned by [keySelector] the last one gets added to the map.\n * \n *  
@sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByTo\n *\npublic inline fun <K,  
M : MutableMap<in K, in Byte>> ByteArray.associateByTo(destination: M, keySelector: (Byte) -> K): M {\n for  
(element in this) {\n destination.put(keySelector(element), element)\n }\n return destination\n}\n\n/n/**\n * Populates and returns the [destination] mutable map with key-value pairs,\n * where key is provided by the  
[keySelector] function applied to each element of the given array\n * and value is the element itself.\n * \n * If any  
two elements would have the same key returned by [keySelector] the last one gets added to the map.\n * \n *  
@sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByTo\n *\npublic inline fun <K,  
M : MutableMap<in K, in Short>> ShortArray.associateByTo(destination: M, keySelector: (Short) -> K): M {\n for  
(element in this) {\n destination.put(keySelector(element), element)\n }\n return destination\n}\n\n/n/**\n * Populates and returns the [destination] mutable map with key-value pairs,\n * where key is provided by the  
[keySelector] function applied to each element of the given array\n * and value is the element itself.\n * \n * If any  
two elements would have the same key returned by [keySelector] the last one gets added to the map.\n * \n *  
@sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByTo\n *\npublic inline fun <K,  
M : MutableMap<in K, in Int>> IntArray.associateByTo(destination: M, keySelector: (Int) -> K): M {\n for  
(element in this) {\n destination.put(keySelector(element), element)\n }\n return destination\n}\n\n/n/**\n * Populates and returns the [destination] mutable map with key-value pairs,\n * where key is provided by the  
[keySelector] function applied to each element of the given array\n * and value is the element itself.\n * \n * If any  
two elements would have the same key returned by [keySelector] the last one gets added to the map.\n * \n *  
@sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByTo\n *\npublic inline fun <K,  
M : MutableMap<in K, in Long>> LongArray.associateByTo(destination: M, keySelector: (Long) -> K): M {\n for  
(element in this) {\n destination.put(keySelector(element), element)\n }\n return destination\n}\n\n/n/**\n * Populates and returns the [destination] mutable map with key-value pairs,\n * where key is provided by the  
[keySelector] function applied to each element of the given array\n * and value is the element itself.\n * \n * If any  
two elements would have the same key returned by [keySelector] the last one gets added to the map.\n * \n *  
@sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByTo\n *\npublic inline fun <K,  
M : MutableMap<in K, in Float>> FloatArray.associateByTo(destination: M, keySelector: (Float) -> K): M {\n for  
(element in this) {\n destination.put(keySelector(element), element)\n }\n return destination\n}\n\n/n/**\n * Populates and returns the [destination] mutable map with key-value pairs,\n * where key is provided by the  
[keySelector] function applied to each element of the given array\n * and value is the element itself.\n * \n * If any  
two elements would have the same key returned by [keySelector] the last one gets added to the map.\n * \n *  
@sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByTo\n *\npublic inline fun <K,  
M : MutableMap<in K, in Double>> DoubleArray.associateByTo(destination: M, keySelector: (Double) -> K): M  
{\n for (element in this) {\n destination.put(keySelector(element), element)\n }\n return  
destination\n}\n\n/n/**\n * Populates and returns the [destination] mutable map with key-value pairs,\n * where key is  
provided by the [keySelector] function applied to each element of the given array\n * and value is the element  
itself.\n * \n * If any two elements would have the same key returned by [keySelector] the last one gets added to the  
map.\n * \n * @sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByTo\n *\npublic  
inline fun <K, M : MutableMap<in K, in Boolean>> BooleanArray.associateByTo(destination: M, keySelector:  
(Boolean) -> K): M {\n for (element in this) {\n destination.put(keySelector(element), element)\n }\n
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return destination\n}\n\n/**\n * Populates and returns the [destination] mutable map with key-value pairs,\n * where key is provided by the [keySelector] function applied to each element of the given array\n * and value is the element itself.\n * \n * If any two elements would have the same key returned by [keySelector] the last one gets added to the map.\n * \n * @sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByTo\n */\npublic inline fun <K, M : MutableMap<in K, in Char>> CharArray.associateByTo(destination: M, keySelector: (Char) -> K): M {\n    for (element in this) {\n        destination.put(keySelector(element), element)\n    }\n    return destination\n}\n\n/**\n * Populates and returns the [destination] mutable map with key-value pairs,\n * where key is provided by the [keySelector] function and\n * and value is provided by the [valueTransform] function applied to elements of the given array.\n * \n * If any two elements would have the same key returned by [keySelector] the last one gets added to the map.\n * \n * @sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByToWithValueTransform\n */\npublic inline fun <T, K, V, M : MutableMap<in K, in V>> Array<out T>.associateByTo(destination: M, keySelector: (T) -> K, valueTransform: (T) -> V): M {\n    for (element in this) {\n        destination.put(keySelector(element), valueTransform(element))\n    }\n    return destination\n}\n\n/**\n * Populates and returns the [destination] mutable map with key-value pairs,\n * where key is provided by the [keySelector] function and\n * and value is provided by the [valueTransform] function applied to elements of the given array.\n * \n * If any two elements would have the same key returned by [keySelector] the last one gets added to the map.\n * \n * @sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByToWithValueTransform\n */\npublic inline fun <K, V, M : MutableMap<in K, in V>> ByteArray.associateByTo(destination: M, keySelector: (Byte) -> K, valueTransform: (Byte) -> V): M {\n    for (element in this) {\n        destination.put(keySelector(element), valueTransform(element))\n    }\n    return destination\n}\n\n/**\n * Populates and returns the [destination] mutable map with key-value pairs,\n * where key is provided by the [keySelector] function and\n * and value is provided by the [valueTransform] function applied to elements of the given array.\n * \n * If any two elements would have the same key returned by [keySelector] the last one gets added to the map.\n * \n * @sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByToWithValueTransform\n */\npublic inline fun <K, V, M : MutableMap<in K, in V>> ShortArray.associateByTo(destination: M, keySelector: (Short) -> K, valueTransform: (Short) -> V): M {\n    for (element in this) {\n        destination.put(keySelector(element), valueTransform(element))\n    }\n    return destination\n}\n\n/**\n * Populates and returns the [destination] mutable map with key-value pairs,\n * where key is provided by the [keySelector] function and\n * and value is provided by the [valueTransform] function applied to elements of the given array.\n * \n * If any two elements would have the same key returned by [keySelector] the last one gets added to the map.\n * \n * @sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByToWithValueTransform\n */\npublic inline fun <K, V, M : MutableMap<in K, in V>> IntArray.associateByTo(destination: M, keySelector: (Int) -> K, valueTransform: (Int) -> V): M {\n    for (element in this) {\n        destination.put(keySelector(element), valueTransform(element))\n    }\n    return destination\n}\n\n/**\n * Populates and returns the [destination] mutable map with key-value pairs,\n * where key is provided by the [keySelector] function and\n * and value is provided by the [valueTransform] function applied to elements of the given array.\n * \n * If any two elements would have the same key returned by [keySelector] the last one gets added to the map.\n * \n * @sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByToWithValueTransform\n */\npublic inline fun <K, V, M : MutableMap<in K, in V>> LongArray.associateByTo(destination: M, keySelector: (Long) -> K, valueTransform: (Long) -> V): M {\n    for (element in this) {\n        destination.put(keySelector(element), valueTransform(element))\n    }\n    return destination\n}\n\n/**\n * Populates and returns the [destination] mutable map with key-value pairs,\n * where key is provided by the [keySelector] function and\n * and value is provided by the [valueTransform] function applied to elements of the given array.\n * \n * If any two elements would have the same key returned by [keySelector] the last one gets added to the map.\n * \n * @sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByToWithValueTransform\n */\npublic inline fun <K, V, M : MutableMap<in K, in V>> FloatArray.associateByTo(destination: M, keySelector: (Float) -> K, valueTransform: (Float) -> V): M {\n    for (element in this) {\n        destination.put(keySelector(element),

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valueTransform(element))\n } \n return destination\n}\n\n/**\n * Populates and returns the [destination] mutable
map with key-value pairs,\n * where key is provided by the [keySelector] function and\n * and value is provided by
the [valueTransform] function applied to elements of the given array.\n * \n * If any two elements would have the
same key returned by [keySelector] the last one gets added to the map.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByToWithValueTransform\n */\npublic
inline fun <K, V, M : MutableMap<in K, in V>> DoubleArray.associateByTo(destination: M, keySelector:
(Double) -> K, valueTransform: (Double) -> V): M {\n for (element in this) {\n
destination.put(keySelector(element), valueTransform(element))\n } \n return destination\n}\n\n/**\n * Populates
and returns the [destination] mutable map with key-value pairs,\n * where key is provided by the [keySelector]
function and\n * and value is provided by the [valueTransform] function applied to elements of the given array.\n *
\n * If any two elements would have the same key returned by [keySelector] the last one gets added to the map.\n *
\n * @sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByToWithValueTransform\n */\n
public inline fun <K, V, M : MutableMap<in K, in V>> BooleanArray.associateByTo(destination: M,
keySelector: (Boolean) -> K, valueTransform: (Boolean) -> V): M {\n for (element in this) {\n
destination.put(keySelector(element), valueTransform(element))\n } \n return destination\n}\n\n/**\n * Populates
and returns the [destination] mutable map with key-value pairs,\n * where key is provided by the [keySelector]
function and\n * and value is provided by the [valueTransform] function applied to elements of the given array.\n *
\n * If any two elements would have the same key returned by [keySelector] the last one gets added to the map.\n *
\n * @sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByToWithValueTransform\n */\n
public inline fun <K, V, M : MutableMap<in K, in V>> CharArray.associateByTo(destination: M, keySelector:
(Char) -> K, valueTransform: (Char) -> V): M {\n for (element in this) {\n
destination.put(keySelector(element), valueTransform(element))\n } \n return destination\n}\n\n/**\n * Populates
and returns the [destination] mutable map with key-value pairs\n * provided by [transform] function applied to each
element of the given array.\n * \n * If any of two pairs would have the same key the last one gets added to the
map.\n * \n * @sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesTo\n */\npublic
inline fun <T, K, V, M : MutableMap<in K, in V>> Array<out T>.associateTo(destination: M, transform: (T) ->
Pair<K, V>): M {\n for (element in this) {\n destination += transform(element)\n } \n return
destination\n}\n\n/**\n * Populates and returns the [destination] mutable map with key-value pairs\n * provided by
[transform] function applied to each element of the given array.\n * \n * If any of two pairs would have the same key
the last one gets added to the map.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesTo\n */\npublic inline fun <K, V, M :
MutableMap<in K, in V>> ByteArray.associateTo(destination: M, transform: (Byte) -> Pair<K, V>): M {\n for
(element in this) {\n destination += transform(element)\n } \n return destination\n}\n\n/**\n * Populates and
returns the [destination] mutable map with key-value pairs\n * provided by [transform] function applied to each
element of the given array.\n * \n * If any of two pairs would have the same key the last one gets added to the
map.\n * \n * @sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesTo\n */\npublic
inline fun <K, V, M : MutableMap<in K, in V>> ShortArray.associateTo(destination: M, transform: (Short) ->
Pair<K, V>): M {\n for (element in this) {\n destination += transform(element)\n } \n return
destination\n}\n\n/**\n * Populates and returns the [destination] mutable map with key-value pairs\n * provided by
[transform] function applied to each element of the given array.\n * \n * If any of two pairs would have the same key
the last one gets added to the map.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesTo\n */\npublic inline fun <K, V, M :
MutableMap<in K, in V>> IntArray.associateTo(destination: M, transform: (Int) -> Pair<K, V>): M {\n for
(element in this) {\n destination += transform(element)\n } \n return destination\n}\n\n/**\n * Populates and
returns the [destination] mutable map with key-value pairs\n * provided by [transform] function applied to each
element of the given array.\n * \n * If any of two pairs would have the same key the last one gets added to the
map.\n * \n * @sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesTo\n */\npublic
inline fun <K, V, M : MutableMap<in K, in V>> LongArray.associateTo(destination: M, transform: (Long) ->

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Pair<K, V>: M { \n  for (element in this) { \n    destination += transform(element)\n  } \n  return
destination\n}\n\n/**\n * Populates and returns the [destination] mutable map with key-value pairs\n * provided by
[transform] function applied to each element of the given array.\n * \n * If any of two pairs would have the same key
the last one gets added to the map.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesTo\n */\npublic inline fun <K, V, M :
MutableMap<in K, in V>> FloatArray.associateTo(destination: M, transform: (Float) -> Pair<K, V>): M { \n  for
(element in this) { \n    destination += transform(element)\n  } \n  return destination\n}\n\n/**\n * Populates and
returns the [destination] mutable map with key-value pairs\n * provided by [transform] function applied to each
element of the given array.\n * \n * If any of two pairs would have the same key the last one gets added to the
map.\n * \n * @sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesTo\n */\npublic
inline fun <K, V, M : MutableMap<in K, in V>> DoubleArray.associateTo(destination: M, transform: (Double) ->
Pair<K, V>): M { \n  for (element in this) { \n    destination += transform(element)\n  } \n  return
destination\n}\n\n/**\n * Populates and returns the [destination] mutable map with key-value pairs\n * provided by
[transform] function applied to each element of the given array.\n * \n * If any of two pairs would have the same key
the last one gets added to the map.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesTo\n */\npublic inline fun <K, V, M :
MutableMap<in K, in V>> BooleanArray.associateTo(destination: M, transform: (Boolean) -> Pair<K, V>): M { \n
for (element in this) { \n    destination += transform(element)\n  } \n  return destination\n}\n\n/**\n * Populates
and returns the [destination] mutable map with key-value pairs\n * provided by [transform] function applied to each
element of the given array.\n * \n * If any of two pairs would have the same key the last one gets added to the
map.\n * \n * @sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesTo\n */\npublic
inline fun <K, V, M : MutableMap<in K, in V>> CharArray.associateTo(destination: M, transform: (Char) ->
Pair<K, V>): M { \n  for (element in this) { \n    destination += transform(element)\n  } \n  return
destination\n}\n\n/**\n * Appends all elements to the given [destination] collection.\n */\npublic fun <T, C :
MutableCollection<in T>> Array<out T>.toCollection(destination: C): C { \n  for (item in this) { \n
destination.add(item)\n  } \n  return destination\n}\n\n/**\n * Appends all elements to the given [destination]
collection.\n */\npublic fun <C : MutableCollection<in Byte>> ByteArray.toCollection(destination: C): C { \n  for
(item in this) { \n    destination.add(item)\n  } \n  return destination\n}\n\n/**\n * Appends all elements to the
given [destination] collection.\n */\npublic fun <C : MutableCollection<in Short>>
ShortArray.toCollection(destination: C): C { \n  for (item in this) { \n    destination.add(item)\n  } \n  return
destination\n}\n\n/**\n * Appends all elements to the given [destination] collection.\n */\npublic fun <C :
MutableCollection<in Int>> IntArray.toCollection(destination: C): C { \n  for (item in this) { \n
destination.add(item)\n  } \n  return destination\n}\n\n/**\n * Appends all elements to the given [destination]
collection.\n */\npublic fun <C : MutableCollection<in Long>> LongArray.toCollection(destination: C): C { \n  for
(item in this) { \n    destination.add(item)\n  } \n  return destination\n}\n\n/**\n * Appends all elements to the
given [destination] collection.\n */\npublic fun <C : MutableCollection<in Float>>
FloatArray.toCollection(destination: C): C { \n  for (item in this) { \n    destination.add(item)\n  } \n  return
destination\n}\n\n/**\n * Appends all elements to the given [destination] collection.\n */\npublic fun <C :
MutableCollection<in Double>> DoubleArray.toCollection(destination: C): C { \n  for (item in this) { \n
destination.add(item)\n  } \n  return destination\n}\n\n/**\n * Appends all elements to the given [destination]
collection.\n */\npublic fun <C : MutableCollection<in Boolean>> BooleanArray.toCollection(destination: C): C { \n
for (item in this) { \n    destination.add(item)\n  } \n  return destination\n}\n\n/**\n * Appends all elements to
the given [destination] collection.\n */\npublic fun <C : MutableCollection<in Char>>
CharArray.toCollection(destination: C): C { \n  for (item in this) { \n    destination.add(item)\n  } \n  return
destination\n}\n\n/**\n * Returns a [HashSet] of all elements.\n */\npublic fun <T> Array<out T>.toHashSet():
HashSet<T> { \n  return toCollection(HashSet<T>(mapCapacity(size)))\n}\n\n/**\n * Returns a [HashSet] of all
elements.\n */\npublic fun ByteArray.toHashSet(): HashSet<Byte> { \n  return
toCollection(HashSet<Byte>(mapCapacity(size)))\n}\n\n/**\n * Returns a [HashSet] of all elements.\n */\npublic

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fun ShortArray.toHashSet(): HashSet<Short> {\n  return
toCollection(HashSet<Short>(mapCapacity(size)))\n}\n\n/**\n * Returns a [HashSet] of all elements.\n */\npublic
fun IntArray.toHashSet(): HashSet<Int> {\n  return toCollection(HashSet<Int>(mapCapacity(size)))\n}\n\n/**\n *
Returns a [HashSet] of all elements.\n */\npublic fun LongArray.toHashSet(): HashSet<Long> {\n  return
toCollection(HashSet<Long>(mapCapacity(size)))\n}\n\n/**\n * Returns a [HashSet] of all elements.\n */\npublic
fun FloatArray.toHashSet(): HashSet<Float> {\n  return
toCollection(HashSet<Float>(mapCapacity(size)))\n}\n\n/**\n * Returns a [HashSet] of all elements.\n */\npublic
fun DoubleArray.toHashSet(): HashSet<Double> {\n  return
toCollection(HashSet<Double>(mapCapacity(size)))\n}\n\n/**\n * Returns a [HashSet] of all elements.\n */\npublic
fun BooleanArray.toHashSet(): HashSet<Boolean> {\n  return
toCollection(HashSet<Boolean>(mapCapacity(size)))\n}\n\n/**\n * Returns a [HashSet] of all elements.\n
*/\npublic fun CharArray.toHashSet(): HashSet<Char> {\n  return
toCollection(HashSet<Char>(mapCapacity(size)))\n}\n\n/**\n * Returns a [List] containing all elements.\n
*/\npublic fun <T> Array<out T>.toList(): List<T> {\n  return when (size) {\n    0 -> emptyList()\n    1 ->
listOf(this[0])\n    else -> this.toMutableList()\n  }\n}\n\n/**\n * Returns a [List] containing all elements.\n
*/\npublic fun ByteArray.toList(): List<Byte> {\n  return when (size) {\n    0 -> emptyList()\n    1 ->
listOf(this[0])\n    else -> this.toMutableList()\n  }\n}\n\n/**\n * Returns a [List] containing all elements.\n
*/\npublic fun ShortArray.toList(): List<Short> {\n  return when (size) {\n    0 -> emptyList()\n    1 ->
listOf(this[0])\n    else -> this.toMutableList()\n  }\n}\n\n/**\n * Returns a [List] containing all elements.\n
*/\npublic fun IntArray.toList(): List<Int> {\n  return when (size) {\n    0 -> emptyList()\n    1 ->
listOf(this[0])\n    else -> this.toMutableList()\n  }\n}\n\n/**\n * Returns a [List] containing all elements.\n
*/\npublic fun LongArray.toList(): List<Long> {\n  return when (size) {\n    0 -> emptyList()\n    1 ->
listOf(this[0])\n    else -> this.toMutableList()\n  }\n}\n\n/**\n * Returns a [List] containing all elements.\n
*/\npublic fun FloatArray.toList(): List<Float> {\n  return when (size) {\n    0 -> emptyList()\n    1 ->
listOf(this[0])\n    else -> this.toMutableList()\n  }\n}\n\n/**\n * Returns a [List] containing all elements.\n
*/\npublic fun DoubleArray.toList(): List<Double> {\n  return when (size) {\n    0 -> emptyList()\n    1 ->
listOf(this[0])\n    else -> this.toMutableList()\n  }\n}\n\n/**\n * Returns a [List] containing all elements.\n
*/\npublic fun BooleanArray.toList(): List<Boolean> {\n  return when (size) {\n    0 -> emptyList()\n    1 ->
listOf(this[0])\n    else -> this.toMutableList()\n  }\n}\n\n/**\n * Returns a [List] containing all elements.\n
*/\npublic fun CharArray.toList(): List<Char> {\n  return when (size) {\n    0 -> emptyList()\n    1 ->
listOf(this[0])\n    else -> this.toMutableList()\n  }\n}\n\n/**\n * Returns a [MutableList] filled with all elements
of this array.\n */\npublic fun <T> Array<out T>.toMutableList(): MutableList<T> {\n  return
ArrayList(this.asCollection())\n}\n\n/**\n * Returns a [MutableList] filled with all elements of this array.\n
*/\npublic fun ByteArray.toMutableList(): MutableList<Byte> {\n  val list = ArrayList<Byte>(size)\n  for (item
in this) list.add(item)\n  return list\n}\n\n/**\n * Returns a [MutableList] filled with all elements of this array.\n
*/\npublic fun ShortArray.toMutableList(): MutableList<Short> {\n  val list = ArrayList<Short>(size)\n  for (item
in this) list.add(item)\n  return list\n}\n\n/**\n * Returns a [MutableList] filled with all elements of this array.\n
*/\npublic fun IntArray.toMutableList(): MutableList<Int> {\n  val list = ArrayList<Int>(size)\n  for (item in this)
list.add(item)\n  return list\n}\n\n/**\n * Returns a [MutableList] filled with all elements of this array.\n
*/\npublic fun LongArray.toMutableList(): MutableList<Long> {\n  val list = ArrayList<Long>(size)\n  for (item in this)
list.add(item)\n  return list\n}\n\n/**\n * Returns a [MutableList] filled with all elements of this array.\n
*/\npublic fun FloatArray.toMutableList(): MutableList<Float> {\n  val list = ArrayList<Float>(size)\n  for (item in this)
list.add(item)\n  return list\n}\n\n/**\n * Returns a [MutableList] filled with all elements of this array.\n
*/\npublic fun DoubleArray.toMutableList(): MutableList<Double> {\n  val list = ArrayList<Double>(size)\n  for (item in
this) list.add(item)\n  return list\n}\n\n/**\n * Returns a [MutableList] filled with all elements of this array.\n
*/\npublic fun BooleanArray.toMutableList(): MutableList<Boolean> {\n  val list = ArrayList<Boolean>(size)\n  for (item
in this) list.add(item)\n  return list\n}\n\n/**\n * Returns a [MutableList] filled with all elements of this
array.\n */\npublic fun CharArray.toMutableList(): MutableList<Char> {\n  val list = ArrayList<Char>(size)\n

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for (item in this) list.add(item)\n    return list\n}\n\n/**\n * Returns a [Set] of all elements.\n * \n * The returned set
preserves the element iteration order of the original array.\n */\npublic fun <T> Array<out T>.toSet(): Set<T> {\n
return when (size) {\n    0 -> emptySet()\n    1 -> setOf(this[0])\n    else ->
toCollection(LinkedHashSet<T>(mapCapacity(size)))\n } }\n\n/**\n * Returns a [Set] of all elements.\n * \n *
The returned set preserves the element iteration order of the original array.\n */\npublic fun ByteArray.toSet():
Set<Byte> {\n    return when (size) {\n        0 -> emptySet()\n        1 -> setOf(this[0])\n        else ->
toCollection(LinkedHashSet<Byte>(mapCapacity(size)))\n    } }\n\n/**\n * Returns a [Set] of all elements.\n * \n *
The returned set preserves the element iteration order of the original array.\n */\npublic fun ShortArray.toSet():
Set<Short> {\n    return when (size) {\n        0 -> emptySet()\n        1 -> setOf(this[0])\n        else ->
toCollection(LinkedHashSet<Short>(mapCapacity(size)))\n    } }\n\n/**\n * Returns a [Set] of all elements.\n * \n *
The returned set preserves the element iteration order of the original array.\n */\npublic fun IntArray.toSet():
Set<Int> {\n    return when (size) {\n        0 -> emptySet()\n        1 -> setOf(this[0])\n        else ->
toCollection(LinkedHashSet<Int>(mapCapacity(size)))\n    } }\n\n/**\n * Returns a [Set] of all elements.\n * \n *
The returned set preserves the element iteration order of the original array.\n */\npublic fun LongArray.toSet():
Set<Long> {\n    return when (size) {\n        0 -> emptySet()\n        1 -> setOf(this[0])\n        else ->
toCollection(LinkedHashSet<Long>(mapCapacity(size)))\n    } }\n\n/**\n * Returns a [Set] of all elements.\n * \n *
The returned set preserves the element iteration order of the original array.\n */\npublic fun FloatArray.toSet():
Set<Float> {\n    return when (size) {\n        0 -> emptySet()\n        1 -> setOf(this[0])\n        else ->
toCollection(LinkedHashSet<Float>(mapCapacity(size)))\n    } }\n\n/**\n * Returns a [Set] of all elements.\n * \n *
The returned set preserves the element iteration order of the original array.\n */\npublic fun DoubleArray.toSet():
Set<Double> {\n    return when (size) {\n        0 -> emptySet()\n        1 -> setOf(this[0])\n        else ->
toCollection(LinkedHashSet<Double>(mapCapacity(size)))\n    } }\n\n/**\n * Returns a [Set] of all elements.\n * \n *
The returned set preserves the element iteration order of the original array.\n */\npublic fun
BooleanArray.toSet(): Set<Boolean> {\n    return when (size) {\n        0 -> emptySet()\n        1 -> setOf(this[0])\n
else -> toCollection(LinkedHashSet<Boolean>(mapCapacity(size)))\n    } }\n\n/**\n * Returns a [Set] of all
elements.\n * \n * The returned set preserves the element iteration order of the original array.\n */\npublic fun
CharArray.toSet(): Set<Char> {\n    return when (size) {\n        0 -> emptySet()\n        1 -> setOf(this[0])\n
else -> toCollection(LinkedHashSet<Char>(mapCapacity(size)))\n    } }\n\n/**\n * Returns a single list of all elements
yielded from results of [transform] function being invoked on each element of original array.\n * \n * @sample
samples.collections.Collections.Transformations.flatMap\n */\npublic inline fun <T, R> Array<out
T>.flatMap(transform: (T) -> Iterable<R>): List<R> {\n    return flatMapTo(ArrayList<R>(), transform)\n}\n\n/**\n *
Returns a single list of all elements yielded from results of [transform] function being invoked on each element of
original array.\n * \n * @sample samples.collections.Collections.Transformations.flatMap\n */\npublic inline fun
<R> ByteArray.flatMap(transform: (Byte) -> Iterable<R>): List<R> {\n    return flatMapTo(ArrayList<R>(),
transform)\n}\n\n/**\n * Returns a single list of all elements yielded from results of [transform] function being
invoked on each element of original array.\n * \n * @sample
samples.collections.Collections.Transformations.flatMap\n */\npublic inline fun <R> ShortArray.flatMap(transform:
(Short) -> Iterable<R>): List<R> {\n    return flatMapTo(ArrayList<R>(), transform)\n}\n\n/**\n * Returns a single
list of all elements yielded from results of [transform] function being invoked on each element of original array.\n *
\n * @sample samples.collections.Collections.Transformations.flatMap\n */\npublic inline fun <R>
IntArray.flatMap(transform: (Int) -> Iterable<R>): List<R> {\n    return flatMapTo(ArrayList<R>(),
transform)\n}\n\n/**\n * Returns a single list of all elements yielded from results of [transform] function being
invoked on each element of original array.\n * \n * @sample
samples.collections.Collections.Transformations.flatMap\n */\npublic inline fun <R> LongArray.flatMap(transform:
(Long) -> Iterable<R>): List<R> {\n    return flatMapTo(ArrayList<R>(), transform)\n}\n\n/**\n * Returns a single
list of all elements yielded from results of [transform] function being invoked on each element of original array.\n *
\n * @sample samples.collections.Collections.Transformations.flatMap\n */\npublic inline fun <R>
FloatArray.flatMap(transform: (Float) -> Iterable<R>): List<R> {\n    return flatMapTo(ArrayList<R>(),

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transform)\n}\n\n/**\n * Returns a single list of all elements yielded from results of [transform] function being
invoked on each element of original array.\n * \n * @sample
samples.collections.Collections.Transformations.flatMap\n *\npublic inline fun <R>
DoubleArray.flatMap(transform: (Double) -> Iterable<R>): List<R> {\n  return flatMapTo(ArrayList<R>(),
transform)\n}\n\n/**\n * Returns a single list of all elements yielded from results of [transform] function being
invoked on each element of original array.\n * \n * @sample
samples.collections.Collections.Transformations.flatMap\n *\npublic inline fun <R>
BooleanArray.flatMap(transform: (Boolean) -> Iterable<R>): List<R> {\n  return flatMapTo(ArrayList<R>(),
transform)\n}\n\n/**\n * Returns a single list of all elements yielded from results of [transform] function being
invoked on each element of original array.\n * \n * @sample
samples.collections.Collections.Transformations.flatMap\n *\npublic inline fun <R> CharArray.flatMap(transform:
(Char) -> Iterable<R>): List<R> {\n  return flatMapTo(ArrayList<R>(), transform)\n}\n\n/**\n * Appends all
elements yielded from results of [transform] function being invoked on each element of original array, to the given
[destination].\n *\npublic inline fun <T, R, C : MutableCollection<in R>> Array<out T>.flatMapTo(destination: C,
transform: (T) -> Iterable<R>): C {\n  for (element in this) {\n    val list = transform(element)\n
destination.addAll(list)\n  }\n  return destination\n}\n\n/**\n * Appends all elements yielded from results of
[transform] function being invoked on each element of original array, to the given [destination].\n *\npublic inline
fun <R, C : MutableCollection<in R>> ByteArray.flatMapTo(destination: C, transform: (Byte) -> Iterable<R>): C
{\n  for (element in this) {\n    val list = transform(element)\n    destination.addAll(list)\n  }\n  return
destination\n}\n\n/**\n * Appends all elements yielded from results of [transform] function being invoked on each
element of original array, to the given [destination].\n *\npublic inline fun <R, C : MutableCollection<in R>>
ShortArray.flatMapTo(destination: C, transform: (Short) -> Iterable<R>): C {\n  for (element in this) {\n    val
list = transform(element)\n    destination.addAll(list)\n  }\n  return destination\n}\n\n/**\n * Appends all
elements yielded from results of [transform] function being invoked on each element of original array, to the given
[destination].\n *\npublic inline fun <R, C : MutableCollection<in R>> IntArray.flatMapTo(destination: C,
transform: (Int) -> Iterable<R>): C {\n  for (element in this) {\n    val list = transform(element)\n
destination.addAll(list)\n  }\n  return destination\n}\n\n/**\n * Appends all elements yielded from results of
[transform] function being invoked on each element of original array, to the given [destination].\n *\npublic inline
fun <R, C : MutableCollection<in R>> LongArray.flatMapTo(destination: C, transform: (Long) -> Iterable<R>): C
{\n  for (element in this) {\n    val list = transform(element)\n    destination.addAll(list)\n  }\n  return
destination\n}\n\n/**\n * Appends all elements yielded from results of [transform] function being invoked on each
element of original array, to the given [destination].\n *\npublic inline fun <R, C : MutableCollection<in R>>
FloatArray.flatMapTo(destination: C, transform: (Float) -> Iterable<R>): C {\n  for (element in this) {\n    val
list = transform(element)\n    destination.addAll(list)\n  }\n  return destination\n}\n\n/**\n * Appends all
elements yielded from results of [transform] function being invoked on each element of original array, to the given
[destination].\n *\npublic inline fun <R, C : MutableCollection<in R>> DoubleArray.flatMapTo(destination: C,
transform: (Double) -> Iterable<R>): C {\n  for (element in this) {\n    val list = transform(element)\n
destination.addAll(list)\n  }\n  return destination\n}\n\n/**\n * Appends all elements yielded from results of
[transform] function being invoked on each element of original array, to the given [destination].\n *\npublic inline
fun <R, C : MutableCollection<in R>> BooleanArray.flatMapTo(destination: C, transform: (Boolean) ->
Iterable<R>): C {\n  for (element in this) {\n    val list = transform(element)\n    destination.addAll(list)\n
}\n  return destination\n}\n\n/**\n * Appends all elements yielded from results of [transform] function being
invoked on each element of original array, to the given [destination].\n *\npublic inline fun <R, C :
MutableCollection<in R>> CharArray.flatMapTo(destination: C, transform: (Char) -> Iterable<R>): C {\n  for
(element in this) {\n    val list = transform(element)\n    destination.addAll(list)\n  }\n  return
destination\n}\n\n/**\n * Groups elements of the original array by the key returned by the given [keySelector]
function\n * applied to each element and returns a map where each group key is associated with a list of
corresponding elements.\n * \n * The returned map preserves the entry iteration order of the keys produced from the

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original array.\n * \n * @sample samples.collections.Collections.Transformations.groupBy\n * \n\npublic inline fun
<T, K> Array<out T>.groupBy(keySelector: (T) -> K): Map<K, List<T>> {\n    return
groupByTo(LinkedHashMap<K, MutableList<T>>(), keySelector)\n}\n\n/**\n * Groups elements of the original
array by the key returned by the given [keySelector] function\n * applied to each element and returns a map where
each group key is associated with a list of corresponding elements.\n * \n * The returned map preserves the entry
iteration order of the keys produced from the original array.\n * \n * @sample
samples.collections.Collections.Transformations.groupBy\n * \n\npublic inline fun <K>
ByteArray.groupBy(keySelector: (Byte) -> K): Map<K, List<Byte>> {\n    return groupByTo(LinkedHashMap<K,
MutableList<Byte>>(), keySelector)\n}\n\n/**\n * Groups elements of the original array by the key returned by the
given [keySelector] function\n * applied to each element and returns a map where each group key is associated with
a list of corresponding elements.\n * \n * The returned map preserves the entry iteration order of the keys produced
from the original array.\n * \n * @sample samples.collections.Collections.Transformations.groupBy\n * \n\npublic
inline fun <K> ShortArray.groupBy(keySelector: (Short) -> K): Map<K, List<Short>> {\n    return
groupByTo(LinkedHashMap<K, MutableList<Short>>(), keySelector)\n}\n\n/**\n * Groups elements of the
original array by the key returned by the given [keySelector] function\n * applied to each element and returns a map
where each group key is associated with a list of corresponding elements.\n * \n * The returned map preserves the
entry iteration order of the keys produced from the original array.\n * \n * @sample
samples.collections.Collections.Transformations.groupBy\n * \n\npublic inline fun <K>
IntArray.groupBy(keySelector: (Int) -> K): Map<K, List<Int>> {\n    return groupByTo(LinkedHashMap<K,
MutableList<Int>>(), keySelector)\n}\n\n/**\n * Groups elements of the original array by the key returned by the
given [keySelector] function\n * applied to each element and returns a map where each group key is associated with
a list of corresponding elements.\n * \n * The returned map preserves the entry iteration order of the keys produced
from the original array.\n * \n * @sample samples.collections.Collections.Transformations.groupBy\n * \n\npublic
inline fun <K> LongArray.groupBy(keySelector: (Long) -> K): Map<K, List<Long>> {\n    return
groupByTo(LinkedHashMap<K, MutableList<Long>>(), keySelector)\n}\n\n/**\n * Groups elements of the
original array by the key returned by the given [keySelector] function\n * applied to each element and returns a map
where each group key is associated with a list of corresponding elements.\n * \n * The returned map preserves the
entry iteration order of the keys produced from the original array.\n * \n * @sample
samples.collections.Collections.Transformations.groupBy\n * \n\npublic inline fun <K>
FloatArray.groupBy(keySelector: (Float) -> K): Map<K, List<Float>> {\n    return groupByTo(LinkedHashMap<K,
MutableList<Float>>(), keySelector)\n}\n\n/**\n * Groups elements of the original array by the key returned by the
given [keySelector] function\n * applied to each element and returns a map where each group key is associated with
a list of corresponding elements.\n * \n * The returned map preserves the entry iteration order of the keys produced
from the original array.\n * \n * @sample samples.collections.Collections.Transformations.groupBy\n * \n\npublic
inline fun <K> DoubleArray.groupBy(keySelector: (Double) -> K): Map<K, List<Double>> {\n    return
groupByTo(LinkedHashMap<K, MutableList<Double>>(), keySelector)\n}\n\n/**\n * Groups elements of the
original array by the key returned by the given [keySelector] function\n * applied to each element and returns a map
where each group key is associated with a list of corresponding elements.\n * \n * The returned map preserves the
entry iteration order of the keys produced from the original array.\n * \n * @sample
samples.collections.Collections.Transformations.groupBy\n * \n\npublic inline fun <K>
BooleanArray.groupBy(keySelector: (Boolean) -> K): Map<K, List<Boolean>> {\n    return
groupByTo(LinkedHashMap<K, MutableList<Boolean>>(), keySelector)\n}\n\n/**\n * Groups elements of the
original array by the key returned by the given [keySelector] function\n * applied to each element and returns a map
where each group key is associated with a list of corresponding elements.\n * \n * The returned map preserves the
entry iteration order of the keys produced from the original array.\n * \n * @sample
samples.collections.Collections.Transformations.groupBy\n * \n\npublic inline fun <K>
CharArray.groupBy(keySelector: (Char) -> K): Map<K, List<Char>> {\n    return groupByTo(LinkedHashMap<K,
MutableList<Char>>(), keySelector)\n}\n\n/**\n * Groups values returned by the [valueTransform] function applied

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to each element of the original array by the key returned by the given [keySelector] function applied to the element and returns a map where each group key is associated with a list of corresponding values. The returned map preserves the entry iteration order of the keys produced from the original array. @sample

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samples.collections.Collections.Transformations.groupByKeyAndValues
public inline fun <T, K, V>
Array<out T>.groupBy(keySelector: (T) -> K, valueTransform: (T) -> V): Map<K, List<V>> {
    return groupByTo(LinkedHashMap<K, MutableList<V>>(), keySelector, valueTransform)
}

```

Groups values returned by the [valueTransform] function applied to each element of the original array by the key returned by the given [keySelector] function applied to the element and returns a map where each group key is associated with a list of corresponding values. The returned map preserves the entry iteration order of the keys produced from the original array. @sample

```

samples.collections.Collections.Transformations.groupByKeyAndValues
public inline fun <K, V>
ByteArray.groupBy(keySelector: (Byte) -> K, valueTransform: (Byte) -> V): Map<K, List<V>> {
    return groupByTo(LinkedHashMap<K, MutableList<V>>(), keySelector, valueTransform)
}

```

Groups values returned by the [valueTransform] function applied to each element of the original array by the key returned by the given [keySelector] function applied to the element and returns a map where each group key is associated with a list of corresponding values. The returned map preserves the entry iteration order of the keys produced from the original array. @sample

```

samples.collections.Collections.Transformations.groupByKeyAndValues
public inline fun <K, V>
ShortArray.groupBy(keySelector: (Short) -> K, valueTransform: (Short) -> V): Map<K, List<V>> {
    return groupByTo(LinkedHashMap<K, MutableList<V>>(), keySelector, valueTransform)
}

```

Groups values returned by the [valueTransform] function applied to each element of the original array by the key returned by the given [keySelector] function applied to the element and returns a map where each group key is associated with a list of corresponding values. The returned map preserves the entry iteration order of the keys produced from the original array. @sample

```

samples.collections.Collections.Transformations.groupByKeyAndValues
public inline fun <K, V>
IntArray.groupBy(keySelector: (Int) -> K, valueTransform: (Int) -> V): Map<K, List<V>> {
    return groupByTo(LinkedHashMap<K, MutableList<V>>(), keySelector, valueTransform)
}

```

Groups values returned by the [valueTransform] function applied to each element of the original array by the key returned by the given [keySelector] function applied to the element and returns a map where each group key is associated with a list of corresponding values. The returned map preserves the entry iteration order of the keys produced from the original array. @sample

```

samples.collections.Collections.Transformations.groupByKeyAndValues
public inline fun <K, V>
LongArray.groupBy(keySelector: (Long) -> K, valueTransform: (Long) -> V): Map<K, List<V>> {
    return groupByTo(LinkedHashMap<K, MutableList<V>>(), keySelector, valueTransform)
}

```

Groups values returned by the [valueTransform] function applied to each element of the original array by the key returned by the given [keySelector] function applied to the element and returns a map where each group key is associated with a list of corresponding values. The returned map preserves the entry iteration order of the keys produced from the original array. @sample

```

samples.collections.Collections.Transformations.groupByKeyAndValues
public inline fun <K, V>
FloatArray.groupBy(keySelector: (Float) -> K, valueTransform: (Float) -> V): Map<K, List<V>> {
    return groupByTo(LinkedHashMap<K, MutableList<V>>(), keySelector, valueTransform)
}

```

Groups values returned by the [valueTransform] function applied to each element of the original array by the key returned by the given [keySelector] function applied to the element and returns a map where each group key is associated with a list of corresponding values. The returned map preserves the entry iteration order of the keys produced from the original array. @sample

```

samples.collections.Collections.Transformations.groupByKeyAndValues
public inline fun <K, V>
DoubleArray.groupBy(keySelector: (Double) -> K, valueTransform: (Double) -> V): Map<K, List<V>> {
    return groupByTo(LinkedHashMap<K, MutableList<V>>(), keySelector, valueTransform)
}

```

Groups values returned by the [valueTransform] function applied to each element of the original array by the key returned by the given [keySelector] function applied to the element and returns a map where each group key is associated with a list of corresponding values. The returned map preserves the entry iteration order of the keys produced from the original array. @sample



values returned by the [valueTransform] function applied to each element of the original array by the key returned by the given [keySelector] function applied to the element and returns a map where each group key is associated with a list of corresponding values. The returned map preserves the entry iteration order of the keys produced from the original array.

```

@sample
samples.collections.Collections.Transformations.groupByKeyAndValues
public inline fun <K, V>
BooleanArray.groupBy(keySelector: (Boolean) -> K, valueTransform: (Boolean) -> V): Map<K, List<V>> {
return groupByTo(LinkedHashMap<K, MutableList<V>>(), keySelector, valueTransform)
}
Groups values returned by the [valueTransform] function applied to each element of the original array by the key returned by the given [keySelector] function applied to the element and returns a map where each group key is associated with a list of corresponding values. The returned map preserves the entry iteration order of the keys produced from the original array.
@sample
samples.collections.Collections.Transformations.groupByKeyAndValues
public inline fun <K, V>
CharArray.groupBy(keySelector: (Char) -> K, valueTransform: (Char) -> V): Map<K, List<V>> {
return groupByTo(LinkedHashMap<K, MutableList<V>>(), keySelector, valueTransform)
}
Groups elements of the original array by the key returned by the given [keySelector] function applied to each element and puts to the [destination] map each group key associated with a list of corresponding elements.
@return The [destination] map.
@sample
samples.collections.Collections.Transformations.groupBy
public inline fun <T, K, M : MutableMap<in K, MutableList<T>>> Array<out T>.groupByTo(destination: M, keySelector: (T) -> K): M {
for (element in this) {
val key = keySelector(element)
val list = destination.getOrPut(key) { ArrayList<T>() }
list.add(element)
}
return destination
}
Groups elements of the original array by the key returned by the given [keySelector] function applied to each element and puts to the [destination] map each group key associated with a list of corresponding elements.
@return The [destination] map.
@sample
samples.collections.Collections.Transformations.groupBy
public inline fun <K, M : MutableMap<in K, MutableList<Byte>>> ByteArray.groupByTo(destination: M, keySelector: (Byte) -> K): M {
for (element in this) {
val key = keySelector(element)
val list = destination.getOrPut(key) { ArrayList<Byte>() }
list.add(element)
}
return destination
}
Groups elements of the original array by the key returned by the given [keySelector] function applied to each element and puts to the [destination] map each group key associated with a list of corresponding elements.
@return The [destination] map.
@sample
samples.collections.Collections.Transformations.groupBy
public inline fun <K, M : MutableMap<in K, MutableList<Short>>> ShortArray.groupByTo(destination: M, keySelector: (Short) -> K): M {
for (element in this) {
val key = keySelector(element)
val list = destination.getOrPut(key) { ArrayList<Short>() }
list.add(element)
}
return destination
}
Groups elements of the original array by the key returned by the given [keySelector] function applied to each element and puts to the [destination] map each group key associated with a list of corresponding elements.
@return The [destination] map.
@sample
samples.collections.Collections.Transformations.groupBy
public inline fun <K, M : MutableMap<in K, MutableList<Int>>> IntArray.groupByTo(destination: M, keySelector: (Int) -> K): M {
for (element in this) {
val key = keySelector(element)
val list = destination.getOrPut(key) { ArrayList<Int>() }
list.add(element)
}
return destination
}
Groups elements of the original array by the key returned by the given [keySelector] function applied to each element and puts to the [destination] map each group key associated with a list of corresponding elements.
@return The [destination] map.
@sample
samples.collections.Collections.Transformations.groupBy
public inline fun <K, M : MutableMap<in K, MutableList<Long>>> LongArray.groupByTo(destination: M, keySelector: (Long) -> K): M {
for (element in this) {
val key = keySelector(element)
val list = destination.getOrPut(key) { ArrayList<Long>() }
list.add(element)
}
return destination
}
Groups elements of the original array by the key returned by the given [keySelector] function applied to each element and puts to the [destination] map each group key associated with a list of corresponding elements.
@return The [destination] map.
@sample
samples.collections.Collections.Transformations.groupBy
public inline fun <K, M : MutableMap<in K, MutableList<Float>>> FloatArray.groupByTo(destination: M,

```

```

keySelector: (Float) -> K): M {\n  for (element in this) {\n    val key = keySelector(element)\n    val list =
destination.getOrPut(key) { ArrayList<Float>() }\n    list.add(element)\n  }\n  return destination\n}\n\n/**\n *
Groups elements of the original array by the key returned by the given [keySelector] function\n * applied to each
element and puts to the [destination] map each group key associated with a list of corresponding elements.\n * \n *
@return The [destination] map.\n * \n * @sample samples.collections.Collections.Transformations.groupBy\n
*/\npublic inline fun <K, M : MutableMap<in K, MutableList<Double>>> DoubleArray.groupByTo(destination: M,
keySelector: (Double) -> K): M {\n  for (element in this) {\n    val key = keySelector(element)\n    val list =
destination.getOrPut(key) { ArrayList<Double>() }\n    list.add(element)\n  }\n  return destination\n}\n\n/**\n *
Groups elements of the original array by the key returned by the given [keySelector] function\n * applied to each
element and puts to the [destination] map each group key associated with a list of corresponding elements.\n * \n *
@return The [destination] map.\n * \n * @sample samples.collections.Collections.Transformations.groupBy\n
*/\npublic inline fun <K, M : MutableMap<in K, MutableList<Boolean>>> BooleanArray.groupByTo(destination:
M, keySelector: (Boolean) -> K): M {\n  for (element in this) {\n    val key = keySelector(element)\n    val list
= destination.getOrPut(key) { ArrayList<Boolean>() }\n    list.add(element)\n  }\n  return
destination\n}\n\n/**\n * Groups elements of the original array by the key returned by the given [keySelector]
function\n * applied to each element and puts to the [destination] map each group key associated with a list of
corresponding elements.\n * \n * @return The [destination] map.\n * \n * @sample
samples.collections.Collections.Transformations.groupBy\n
*/\npublic inline fun <K, M : MutableMap<in K,
MutableList<Char>>> CharArray.groupByTo(destination: M, keySelector: (Char) -> K): M {\n  for (element in
this) {\n    val key = keySelector(element)\n    val list = destination.getOrPut(key) { ArrayList<Char>() }\n
list.add(element)\n  }\n  return destination\n}\n\n/**\n * Groups values returned by the [valueTransform] function
applied to each element of the original array\n * by the key returned by the given [keySelector] function applied to
the element\n * and puts to the [destination] map each group key associated with a list of corresponding values.\n *
\n * @return The [destination] map.\n * \n * @sample
samples.collections.Collections.Transformations.groupByKeysAndValues\n
*/\npublic inline fun <T, K, V, M :
MutableMap<in K, MutableList<V>>> Array<out T>.groupByTo(destination: M, keySelector: (T) -> K,
valueTransform: (T) -> V): M {\n  for (element in this) {\n    val key = keySelector(element)\n    val list =
destination.getOrPut(key) { ArrayList<V>() }\n    list.add(valueTransform(element))\n  }\n  return
destination\n}\n\n/**\n * Groups values returned by the [valueTransform] function applied to each element of the
original array\n * by the key returned by the given [keySelector] function applied to the element\n * and puts to the
[destination] map each group key associated with a list of corresponding values.\n * \n * @return The [destination]
map.\n * \n * @sample samples.collections.Collections.Transformations.groupByKeysAndValues\n
*/\npublic
inline fun <K, V, M : MutableMap<in K, MutableList<V>>> ByteArray.groupByTo(destination: M, keySelector:
(Byte) -> K, valueTransform: (Byte) -> V): M {\n  for (element in this) {\n    val key = keySelector(element)\n
val list = destination.getOrPut(key) { ArrayList<V>() }\n    list.add(valueTransform(element))\n  }\n  return
destination\n}\n\n/**\n * Groups values returned by the [valueTransform] function applied to each element of the
original array\n * by the key returned by the given [keySelector] function applied to the element\n * and puts to the
[destination] map each group key associated with a list of corresponding values.\n * \n * @return The [destination]
map.\n * \n * @sample samples.collections.Collections.Transformations.groupByKeysAndValues\n
*/\npublic
inline fun <K, V, M : MutableMap<in K, MutableList<V>>> ShortArray.groupByTo(destination: M, keySelector:
(Short) -> K, valueTransform: (Short) -> V): M {\n  for (element in this) {\n    val key = keySelector(element)\n
val list = destination.getOrPut(key) { ArrayList<V>() }\n    list.add(valueTransform(element))\n  }\n  return
destination\n}\n\n/**\n * Groups values returned by the [valueTransform] function applied to each element of the
original array\n * by the key returned by the given [keySelector] function applied to the element\n * and puts to the
[destination] map each group key associated with a list of corresponding values.\n * \n * @return The [destination]
map.\n * \n * @sample samples.collections.Collections.Transformations.groupByKeysAndValues\n
*/\npublic
inline fun <K, V, M : MutableMap<in K, MutableList<V>>> IntArray.groupByTo(destination: M, keySelector:
(Int) -> K, valueTransform: (Int) -> V): M {\n  for (element in this) {\n    val key = keySelector(element)\n

```

```

val list = destination.getOrPut(key) { ArrayList<V>() } list.add(valueTransform(element)) } return
destination}

/** Groups values returned by the [valueTransform] function applied to each element of the
original array by the key returned by the given [keySelector] function applied to the element and puts to the
[destination] map each group key associated with a list of corresponding values.

@return The [destination]
map.

@sample samples.collections.Collections.Transformations.groupByKeyAndValues

public
inline fun <K, V, M : MutableMap<in K, MutableList<V>>> LongArray.groupByTo(destination: M, keySelector:
(Long) -> K, valueTransform: (Long) -> V): M {
    for (element in this) {
        val key = keySelector(element)
        val list = destination.getOrPut(key) { ArrayList<V>() } list.add(valueTransform(element)) }
    return destination}

/** Groups values returned by the [valueTransform] function applied to each element of the
original array by the key returned by the given [keySelector] function applied to the element and puts to the
[destination] map each group key associated with a list of corresponding values.

@return The [destination]
map.

@sample samples.collections.Collections.Transformations.groupByKeyAndValues

public
inline fun <K, V, M : MutableMap<in K, MutableList<V>>> FloatArray.groupByTo(destination: M, keySelector:
(Float) -> K, valueTransform: (Float) -> V): M {
    for (element in this) {
        val key = keySelector(element)
        val list = destination.getOrPut(key) { ArrayList<V>() } list.add(valueTransform(element)) }
    return destination}

/** Groups values returned by the [valueTransform] function applied to each element of the
original array by the key returned by the given [keySelector] function applied to the element and puts to the
[destination] map each group key associated with a list of corresponding values.

@return The [destination]
map.

@sample samples.collections.Collections.Transformations.groupByKeyAndValues

public
inline fun <K, V, M : MutableMap<in K, MutableList<V>>> DoubleArray.groupByTo(destination: M, keySelector:
(Double) -> K, valueTransform: (Double) -> V): M {
    for (element in this) {
        val key =
keySelector(element)
        val list = destination.getOrPut(key) { ArrayList<V>() } list.add(valueTransform(element)) }
    return destination}

/** Groups values returned by the
[valueTransform] function applied to each element of the original array by the key returned by the given
[keySelector] function applied to the element and puts to the [destination] map each group key associated with a
list of corresponding values.

@return The [destination] map.

@sample
samples.collections.Collections.Transformations.groupByKeyAndValues

public inline fun <K, V, M :
MutableMap<in K, MutableList<V>>> BooleanArray.groupByTo(destination: M, keySelector: (Boolean) -> K,
valueTransform: (Boolean) -> V): M {
    for (element in this) {
        val key = keySelector(element)
        val list
= destination.getOrPut(key) { ArrayList<V>() } list.add(valueTransform(element)) }
    return
destination}

/** Groups values returned by the [valueTransform] function applied to each element of the
original array by the key returned by the given [keySelector] function applied to the element and puts to the
[destination] map each group key associated with a list of corresponding values.

@return The [destination]
map.

@sample samples.collections.Collections.Transformations.groupByKeyAndValues

public
inline fun <K, V, M : MutableMap<in K, MutableList<V>>> CharArray.groupByTo(destination: M, keySelector:
(Char) -> K, valueTransform: (Char) -> V): M {
    for (element in this) {
        val key = keySelector(element)
        val list = destination.getOrPut(key) { ArrayList<V>() } list.add(valueTransform(element)) }
    return
destination}

/** Creates a [Grouping] source from an array to be used later with one of group-and-fold
operations using the specified [keySelector] function to extract a key from each element.

@sample
samples.collections.Grouping.groupingByEachCount

@SinceKotlin("1.1")
public inline fun <T, K>
Array<out T>.groupingBy(crossinline keySelector: (T) -> K): Grouping<T, K> {
    return object : Grouping<T,
K> {
        override fun sourceIterator(): Iterator<T> = this@groupingBy.iterator()
        override fun
keyOf(element: T): K = keySelector(element)
    }
}

/** Returns a list containing the results of applying
the given [transform] function to each element in the original array.

@sample
samples.collections.Collections.Transformations.map

public inline fun <T, R> Array<out T>.map(transform:
(T) -> R): List<R> {
    return mapTo(ArrayList<R>(size), transform)}

/** Returns a list containing the
results of applying the given [transform] function to each element in the original array.

@sample
samples.collections.Collections.Transformations.map

public inline fun <R> ByteArray.map(transform: (Byte)

```

-> R): List<R> {\n return mapTo(ArrayList<R>(size), transform)\n}\n\n/\*\*\n \* Returns a list containing the results of applying the given [transform] function\n \* to each element in the original array.\n \* \n \* @sample samples.collections.Collections.Transformations.map\n \* \npublic inline fun <R> ShortArray.map(transform: (Short) -> R): List<R> {\n return mapTo(ArrayList<R>(size), transform)\n}\n\n/\*\*\n \* Returns a list containing the results of applying the given [transform] function\n \* to each element in the original array.\n \* \n \* @sample samples.collections.Collections.Transformations.map\n \* \npublic inline fun <R> IntArray.map(transform: (Int) -> R): List<R> {\n return mapTo(ArrayList<R>(size), transform)\n}\n\n/\*\*\n \* Returns a list containing the results of applying the given [transform] function\n \* to each element in the original array.\n \* \n \* @sample samples.collections.Collections.Transformations.map\n \* \npublic inline fun <R> LongArray.map(transform: (Long) -> R): List<R> {\n return mapTo(ArrayList<R>(size), transform)\n}\n\n/\*\*\n \* Returns a list containing the results of applying the given [transform] function\n \* to each element in the original array.\n \* \n \* @sample samples.collections.Collections.Transformations.map\n \* \npublic inline fun <R> FloatArray.map(transform: (Float) -> R): List<R> {\n return mapTo(ArrayList<R>(size), transform)\n}\n\n/\*\*\n \* Returns a list containing the results of applying the given [transform] function\n \* to each element in the original array.\n \* \n \* @sample samples.collections.Collections.Transformations.map\n \* \npublic inline fun <R> DoubleArray.map(transform: (Double) -> R): List<R> {\n return mapTo(ArrayList<R>(size), transform)\n}\n\n/\*\*\n \* Returns a list containing the results of applying the given [transform] function\n \* to each element in the original array.\n \* \n \* @sample samples.collections.Collections.Transformations.map\n \* \npublic inline fun <R> BooleanArray.map(transform: (Boolean) -> R): List<R> {\n return mapTo(ArrayList<R>(size), transform)\n}\n\n/\*\*\n \* Returns a list containing the results of applying the given [transform] function\n \* to each element in the original array.\n \* \n \* @sample samples.collections.Collections.Transformations.map\n \* \npublic inline fun <R> CharArray.map(transform: (Char) -> R): List<R> {\n return mapTo(ArrayList<R>(size), transform)\n}\n\n/\*\*\n \* Returns a list containing the results of applying the given [transform] function\n \* to each element and its index in the original array.\n \* @param [transform] function that takes the index of an element and the element itself\n \* and returns the result of the transform applied to the element.\n \* \npublic inline fun <T, R> Array<out T>.mapIndexed(transform: (index: Int, T) -> R): List<R> {\n return mapIndexedTo(ArrayList<R>(size), transform)\n}\n\n/\*\*\n \* Returns a list containing the results of applying the given [transform] function\n \* to each element and its index in the original array.\n \* @param [transform] function that takes the index of an element and the element itself\n \* and returns the result of the transform applied to the element.\n \* \npublic inline fun <R> ByteArray.mapIndexed(transform: (index: Int, Byte) -> R): List<R> {\n return mapIndexedTo(ArrayList<R>(size), transform)\n}\n\n/\*\*\n \* Returns a list containing the results of applying the given [transform] function\n \* to each element and its index in the original array.\n \* @param [transform] function that takes the index of an element and the element itself\n \* and returns the result of the transform applied to the element.\n \* \npublic inline fun <R> ShortArray.mapIndexed(transform: (index: Int, Short) -> R): List<R> {\n return mapIndexedTo(ArrayList<R>(size), transform)\n}\n\n/\*\*\n \* Returns a list containing the results of applying the given [transform] function\n \* to each element and its index in the original array.\n \* @param [transform] function that takes the index of an element and the element itself\n \* and returns the result of the transform applied to the element.\n \* \npublic inline fun <R> IntArray.mapIndexed(transform: (index: Int, Int) -> R): List<R> {\n return mapIndexedTo(ArrayList<R>(size), transform)\n}\n\n/\*\*\n \* Returns a list containing the results of applying the given [transform] function\n \* to each element and its index in the original array.\n \* @param [transform] function that takes the index of an element and the element itself\n \* and returns the result of the transform applied to the element.\n \* \npublic inline fun <R> LongArray.mapIndexed(transform: (index: Int, Long) -> R): List<R> {\n return mapIndexedTo(ArrayList<R>(size), transform)\n}\n\n/\*\*\n \* Returns a list containing the results of applying the given [transform] function\n \* to each element and its index in the original array.\n \* @param [transform] function that takes the index of an element and the element itself\n \* and returns the result of the transform applied to the element.\n \* \npublic inline fun <R> FloatArray.mapIndexed(transform: (index: Int, Float) -> R): List<R> {\n return mapIndexedTo(ArrayList<R>(size), transform)\n}\n\n/\*\*\n \* Returns a list containing the results of applying the given [transform] function\n \* to each element and its index in the original array.\n \* \n

@param [transform] function that takes the index of an element and the element itself and returns the result of the transform applied to the element.

```
public inline fun <R> DoubleArray.mapIndexed(transform: (index: Int, Double) -> R): List<R> {
    return mapIndexedTo(ArrayList<R>(size), transform)
}
```

Returns a list containing the results of applying the given [transform] function to each element and its index in the original array.

@param [transform] function that takes the index of an element and the element itself and returns the result of the transform applied to the element.

```
public inline fun <R> BooleanArray.mapIndexed(transform: (index: Int, Boolean) -> R): List<R> {
    return mapIndexedTo(ArrayList<R>(size), transform)
}
```

Returns a list containing the results of applying the given [transform] function to each element and its index in the original array.

@param [transform] function that takes the index of an element and the element itself and returns the result of the transform applied to the element.

```
public inline fun <R> CharArray.mapIndexed(transform: (index: Int, Char) -> R): List<R> {
    return mapIndexedTo(ArrayList<R>(size), transform)
}
```

Returns a list containing only the non-null results of applying the given [transform] function to each element and its index in the original array.

@param [transform] function that takes the index of an element and the element itself and returns the result of the transform applied to the element.

```
public inline fun <T, R : Any> Array<out T>.mapIndexedNotNull(transform: (index: Int, T) -> R?): List<R> {
    return mapIndexedNotNullTo(ArrayList<R>(), transform)
}
```

Applies the given [transform] function to each element and its index in the original array and appends only the non-null results to the given [destination].

@param [transform] function that takes the index of an element and the element itself and returns the result of the transform applied to the element.

```
public inline fun <T, R : Any, C : MutableCollection<in R>> Array<out T>.mapIndexedNotNullTo(destination: C, transform: (index: Int, T) -> R?): C {
    forEachIndexed { index, element -> transform(index, element)?.let { destination.add(it) } }
    return destination
}
```

Applies the given [transform] function to each element and its index in the original array and appends the results to the given [destination].

@param [transform] function that takes the index of an element and the element itself and returns the result of the transform applied to the element.

```
public inline fun <T, R, C : MutableCollection<in R>> Array<out T>.mapIndexedTo(destination: C, transform: (index: Int, T) -> R): C {
    var index = 0
    for (item in this)
        destination.add(transform(index++, item))
    return destination
}
```

Applies the given [transform] function to each element and its index in the original array and appends the results to the given [destination].

@param [transform] function that takes the index of an element and the element itself and returns the result of the transform applied to the element.

```
public inline fun <R, C : MutableCollection<in R>> ByteArray.mapIndexedTo(destination: C, transform: (index: Int, Byte) -> R): C {
    var index = 0
    for (item in this)
        destination.add(transform(index++, item))
    return destination
}
```

Applies the given [transform] function to each element and its index in the original array and appends the results to the given [destination].

@param [transform] function that takes the index of an element and the element itself and returns the result of the transform applied to the element.

```
public inline fun <R, C : MutableCollection<in R>> ShortArray.mapIndexedTo(destination: C, transform: (index: Int, Short) -> R): C {
    var index = 0
    for (item in this)
        destination.add(transform(index++, item))
    return destination
}
```

Applies the given [transform] function to each element and its index in the original array and appends the results to the given [destination].

@param [transform] function that takes the index of an element and the element itself and returns the result of the transform applied to the element.

```
public inline fun <R, C : MutableCollection<in R>> IntArray.mapIndexedTo(destination: C, transform: (index: Int, Int) -> R): C {
    var index = 0
    for (item in this)
        destination.add(transform(index++, item))
    return destination
}
```

Applies the given [transform] function to each element and its index in the original array and appends the results to the given [destination].

@param [transform] function that takes the index of an element and the element itself and returns the result of the transform applied to the element.

```
public inline fun <R, C : MutableCollection<in R>> LongArray.mapIndexedTo(destination: C, transform: (index: Int, Long) -> R): C {
    var index = 0
    for (item in this)
        destination.add(transform(index++, item))
    return destination
}
```

Applies the given [transform] function to each element and its index in the original array and appends the results to the given [destination].

[destination].\n \* @param [transform] function that takes the index of an element and the element itself\n \* and returns the result of the transform applied to the element.\n \*\npublic inline fun <R, C : MutableCollection<in R>> FloatArray.mapIndexedTo(destination: C, transform: (index: Int, Float) -> R): C {\n var index = 0\n for (item in this)\n destination.add(transform(index++, item))\n return destination\n}\n\n/\*\*\n \* Applies the given [transform] function to each element and its index in the original array\n \* and appends the results to the given [destination].\n \* @param [transform] function that takes the index of an element and the element itself\n \* and returns the result of the transform applied to the element.\n \*\npublic inline fun <R, C : MutableCollection<in R>> DoubleArray.mapIndexedTo(destination: C, transform: (index: Int, Double) -> R): C {\n var index = 0\n for (item in this)\n destination.add(transform(index++, item))\n return destination\n}\n\n/\*\*\n \* Applies the given [transform] function to each element and its index in the original array\n \* and appends the results to the given [destination].\n \* @param [transform] function that takes the index of an element and the element itself\n \* and returns the result of the transform applied to the element.\n \*\npublic inline fun <R, C : MutableCollection<in R>> BooleanArray.mapIndexedTo(destination: C, transform: (index: Int, Boolean) -> R): C {\n var index = 0\n for (item in this)\n destination.add(transform(index++, item))\n return destination\n}\n\n/\*\*\n \* Applies the given [transform] function to each element and its index in the original array\n \* and appends the results to the given [destination].\n \* @param [transform] function that takes the index of an element and the element itself\n \* and returns the result of the transform applied to the element.\n \*\npublic inline fun <R, C : MutableCollection<in R>> CharArray.mapIndexedTo(destination: C, transform: (index: Int, Char) -> R): C {\n var index = 0\n for (item in this)\n destination.add(transform(index++, item))\n return destination\n}\n\n/\*\*\n \* Returns a list containing only the non-null results of applying the given [transform] function\n \* to each element in the original array.\n \*\npublic inline fun <T, R : Any> Array<out T>.mapNotNull(transform: (T) -> R?): List<R> {\n return mapNotNullTo(ArrayList<R>(), transform)\n}\n\n/\*\*\n \* Applies the given [transform] function to each element in the original array\n \* and appends only the non-null results to the given [destination].\n \*\npublic inline fun <T, R : Any, C : MutableCollection<in R>> Array<out T>.mapNotNullTo(destination: C, transform: (T) -> R?): C {\n forEach { element -> transform(element)?.let { destination.add(it) } }\n return destination\n}\n\n/\*\*\n \* Applies the given [transform] function to each element of the original array\n \* and appends the results to the given [destination].\n \*\npublic inline fun <T, R, C : MutableCollection<in R>> Array<out T>.mapTo(destination: C, transform: (T) -> R): C {\n for (item in this)\n destination.add(transform(item))\n return destination\n}\n\n/\*\*\n \* Applies the given [transform] function to each element of the original array\n \* and appends the results to the given [destination].\n \*\npublic inline fun <R, C : MutableCollection<in R>> ByteArray.mapTo(destination: C, transform: (Byte) -> R): C {\n for (item in this)\n destination.add(transform(item))\n return destination\n}\n\n/\*\*\n \* Applies the given [transform] function to each element of the original array\n \* and appends the results to the given [destination].\n \*\npublic inline fun <R, C : MutableCollection<in R>> ShortArray.mapTo(destination: C, transform: (Short) -> R): C {\n for (item in this)\n destination.add(transform(item))\n return destination\n}\n\n/\*\*\n \* Applies the given [transform] function to each element of the original array\n \* and appends the results to the given [destination].\n \*\npublic inline fun <R, C : MutableCollection<in R>> IntArray.mapTo(destination: C, transform: (Int) -> R): C {\n for (item in this)\n destination.add(transform(item))\n return destination\n}\n\n/\*\*\n \* Applies the given [transform] function to each element of the original array\n \* and appends the results to the given [destination].\n \*\npublic inline fun <R, C : MutableCollection<in R>> LongArray.mapTo(destination: C, transform: (Long) -> R): C {\n for (item in this)\n destination.add(transform(item))\n return destination\n}\n\n/\*\*\n \* Applies the given [transform] function to each element of the original array\n \* and appends the results to the given [destination].\n \*\npublic inline fun <R, C : MutableCollection<in R>> FloatArray.mapTo(destination: C, transform: (Float) -> R): C {\n for (item in this)\n destination.add(transform(item))\n return destination\n}\n\n/\*\*\n \* Applies the given [transform] function to each element of the original array\n \* and appends the results to the given [destination].\n \*\npublic inline fun <R, C : MutableCollection<in R>> DoubleArray.mapTo(destination: C, transform: (Double) -> R): C {\n for (item in this)\n destination.add(transform(item))\n return destination\n}\n\n/\*\*\n \* Applies the given [transform] function to each element of the original array\n \* and appends the results to the given [destination].\n \*/

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*public inline fun <R, C : MutableCollection<in R>> BooleanArray.mapTo(destination: C, transform: (Boolean)
-> R): C {
    for (item in this)
        destination.add(transform(item))
    return destination
}
* Applies the given [transform] function to each element of the original array and appends the results to the given [destination].

*public inline fun <R, C : MutableCollection<in R>> CharArray.mapTo(destination: C, transform: (Char) -> R): C {
    for (item in this)
        destination.add(transform(item))
    return destination
}
* Returns a lazy [Iterable] that wraps each element of the original array into an [IndexedValue] containing the index of that element and the element itself.

*public fun <T> Array<out T>.withIndex(): Iterable<IndexedValue<T>> {
    return IndexingIterable { iterator() }
}
* Returns a lazy [Iterable] that wraps each element of the original array into an [IndexedValue] containing the index of that element and the element itself.

*public fun ByteArray.withIndex(): Iterable<IndexedValue<Byte>> {
    return IndexingIterable { iterator() }
}
* Returns a lazy [Iterable] that wraps each element of the original array into an [IndexedValue] containing the index of that element and the element itself.

*public fun ShortArray.withIndex(): Iterable<IndexedValue<Short>> {
    return IndexingIterable { iterator() }
}
* Returns a lazy [Iterable] that wraps each element of the original array into an [IndexedValue] containing the index of that element and the element itself.

*public fun IntArray.withIndex(): Iterable<IndexedValue<Int>> {
    return IndexingIterable { iterator() }
}
* Returns a lazy [Iterable] that wraps each element of the original array into an [IndexedValue] containing the index of that element and the element itself.

*public fun LongArray.withIndex(): Iterable<IndexedValue<Long>> {
    return IndexingIterable { iterator() }
}
* Returns a lazy [Iterable] that wraps each element of the original array into an [IndexedValue] containing the index of that element and the element itself.

*public fun FloatArray.withIndex(): Iterable<IndexedValue<Float>> {
    return IndexingIterable { iterator() }
}
* Returns a lazy [Iterable] that wraps each element of the original array into an [IndexedValue] containing the index of that element and the element itself.

*public fun DoubleArray.withIndex(): Iterable<IndexedValue<Double>> {
    return IndexingIterable { iterator() }
}
* Returns a lazy [Iterable] that wraps each element of the original array into an [IndexedValue] containing the index of that element and the element itself.

*public fun BooleanArray.withIndex(): Iterable<IndexedValue<Boolean>> {
    return IndexingIterable { iterator() }
}
* Returns a lazy [Iterable] that wraps each element of the original array into an [IndexedValue] containing the index of that element and the element itself.

*public fun CharArray.withIndex(): Iterable<IndexedValue<Char>> {
    return IndexingIterable { iterator() }
}
* Returns a list containing only distinct elements from the given array.
* The elements in the resulting list are in the same order as they were in the source array.
* @sample
samples.collections.Collections.Transformations.distinctAndDistinctBy

*public fun <T> Array<out T>.distinct(): List<T> {
    return this.toMutableSet().toList()
}
* Returns a list containing only distinct elements from the given array.
* The elements in the resulting list are in the same order as they were in the source array.
* @sample samples.collections.Collections.Transformations.distinctAndDistinctBy

*public fun ByteArray.distinct(): List<Byte> {
    return this.toMutableSet().toList()
}
* Returns a list containing only distinct elements from the given array.
* The elements in the resulting list are in the same order as they were in the source array.
* @sample
samples.collections.Collections.Transformations.distinctAndDistinctBy

*public fun ShortArray.distinct(): List<Short> {
    return this.toMutableSet().toList()
}
* Returns a list containing only distinct elements from the given array.
* The elements in the resulting list are in the same order as they were in the source array.
* @sample samples.collections.Collections.Transformations.distinctAndDistinctBy

*public fun IntArray.distinct(): List<Int> {
    return this.toMutableSet().toList()
}
* Returns a list containing only distinct elements from the given array.
* The elements in the resulting list are in the same order as they were in the source array.
* @sample samples.collections.Collections.Transformations.distinctAndDistinctBy

*public fun LongArray.distinct(): List<Long> {
    return this.toMutableSet().toList()
}
* Returns a list containing only distinct elements from the given array.
* The elements in the resulting list are in the same order as they were in the source array.
* @sample

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samples.collections.Collections.Transformations.distinctAndDistinctBy\n *^\\npublic fun FloatArray.distinct():
List<Float> {\n  return this.toMutableSet().toList()\n}\n\n/**\n * Returns a list containing only distinct elements
from the given array.\n * \n * The elements in the resulting list are in the same order as they were in the source
array.\n * \n * @sample samples.collections.Collections.Transformations.distinctAndDistinctBy\n *^\\npublic fun
DoubleArray.distinct(): List<Double> {\n  return this.toMutableSet().toList()\n}\n\n/**\n * Returns a list
containing only distinct elements from the given array.\n * \n * The elements in the resulting list are in the same
order as they were in the source array.\n * \n * @sample
samples.collections.Collections.Transformations.distinctAndDistinctBy\n *^\\npublic fun BooleanArray.distinct():
List<Boolean> {\n  return this.toMutableSet().toList()\n}\n\n/**\n * Returns a list containing only distinct
elements from the given array.\n * \n * The elements in the resulting list are in the same order as they were in the
source array.\n * \n * @sample samples.collections.Collections.Transformations.distinctAndDistinctBy\n *^\\npublic
fun CharArray.distinct(): List<Char> {\n  return this.toMutableSet().toList()\n}\n\n/**\n * Returns a list containing
only elements from the given array\n * having distinct keys returned by the given [selector] function.\n * \n * The
elements in the resulting list are in the same order as they were in the source array.\n * \n * @sample
samples.collections.Collections.Transformations.distinctAndDistinctBy\n *^\\npublic inline fun <T, K> Array<out
T>.distinctBy(selector: (T) -> K): List<T> {\n  val set = HashSet<K>()\n  val list = ArrayList<T>()\n  for (e in
this) {\n    val key = selector(e)\n    if (set.add(key))\n      list.add(e)\n  }\n  return list\n}\n\n/**\n *
Returns a list containing only elements from the given array\n * having distinct keys returned by the given [selector]
function.\n * \n * The elements in the resulting list are in the same order as they were in the source array.\n * \n *
@sample samples.collections.Collections.Transformations.distinctAndDistinctBy\n *^\\npublic inline fun <K>
ByteArray.distinctBy(selector: (Byte) -> K): List<Byte> {\n  val set = HashSet<K>()\n  val list =
ArrayList<Byte>()\n  for (e in this) {\n    val key = selector(e)\n    if (set.add(key))\n      list.add(e)\n  }\n
return list\n}\n\n/**\n * Returns a list containing only elements from the given array\n * having distinct keys
returned by the given [selector] function.\n * \n * The elements in the resulting list are in the same order as they
were in the source array.\n * \n * @sample
samples.collections.Collections.Transformations.distinctAndDistinctBy\n *^\\npublic inline fun <K>
ShortArray.distinctBy(selector: (Short) -> K): List<Short> {\n  val set = HashSet<K>()\n  val list =
ArrayList<Short>()\n  for (e in this) {\n    val key = selector(e)\n    if (set.add(key))\n      list.add(e)\n  }\n
return list\n}\n\n/**\n * Returns a list containing only elements from the given array\n * having distinct keys
returned by the given [selector] function.\n * \n * The elements in the resulting list are in the same order as they
were in the source array.\n * \n * @sample
samples.collections.Collections.Transformations.distinctAndDistinctBy\n *^\\npublic inline fun <K>
IntArray.distinctBy(selector: (Int) -> K): List<Int> {\n  val set = HashSet<K>()\n  val list = ArrayList<Int>()\n
for (e in this) {\n    val key = selector(e)\n    if (set.add(key))\n      list.add(e)\n  }\n  return list\n}\n\n/**
 * Returns a list containing only elements from the given array\n * having distinct keys returned by the given
[selector] function.\n * \n * The elements in the resulting list are in the same order as they were in the source
array.\n * \n * @sample samples.collections.Collections.Transformations.distinctAndDistinctBy\n *^\\npublic inline
fun <K> LongArray.distinctBy(selector: (Long) -> K): List<Long> {\n  val set = HashSet<K>()\n  val list =
ArrayList<Long>()\n  for (e in this) {\n    val key = selector(e)\n    if (set.add(key))\n      list.add(e)\n  }\n
return list\n}\n\n/**\n * Returns a list containing only elements\n from the given array\n * having distinct keys
returned by the given [selector] function.\n * \n * The elements in the resulting list are in the same order as they
were in the source array.\n * \n * @sample
samples.collections.Collections.Transformations.distinctAndDistinctBy\n *^\\npublic inline fun <K>
FloatArray.distinctBy(selector: (Float) -> K): List<Float> {\n  val set = HashSet<K>()\n  val list =
ArrayList<Float>()\n  for (e in this) {\n    val key = selector(e)\n    if (set.add(key))\n      list.add(e)\n  }\n
return list\n}\n\n/**\n * Returns a list containing only elements from the given array\n * having distinct keys
returned by the given [selector] function.\n * \n * The elements in the resulting list are in the same order as they
were in the source array.\n * \n * @sample

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samples.collections.Collections.Transformations.distinctAndDistinctBy\n *^\npublic inline fun <K>
DoubleArray.distinctBy(selector: (Double) -> K): List<Double> {\n    val set = HashSet<K>()\n    val list =
ArrayList<Double>()\n    for (e in this) {\n        val key = selector(e)\n        if (set.add(key))\n            list.add(e)\n    }\n    return list\n}\n\n/**\n * Returns a list containing only elements from the given array\n * having distinct keys
returned by the given [selector] function.\n * \n * The elements in the resulting list are in the same order as they
were in the source array.\n * \n * @sample
samples.collections.Collections.Transformations.distinctAndDistinctBy\n *^\npublic inline fun <K>
BooleanArray.distinctBy(selector: (Boolean) -> K): List<Boolean> {\n    val set = HashSet<K>()\n    val list =
ArrayList<Boolean>()\n    for (e in this) {\n        val key = selector(e)\n        if (set.add(key))\n            list.add(e)\n    }\n    return list\n}\n\n/**\n * Returns a list containing only elements from the given array\n * having distinct keys
returned by the given [selector] function.\n * \n * The elements in the resulting list are in the same order as they
were in the source array.\n * \n * @sample
samples.collections.Collections.Transformations.distinctAndDistinctBy\n *^\npublic inline fun <K>
CharArray.distinctBy(selector: (Char) -> K): List<Char> {\n    val set = HashSet<K>()\n    val list =
ArrayList<Char>()\n    for (e in this) {\n        val key = selector(e)\n        if (set.add(key))\n            list.add(e)\n    }\n    return list\n}\n\n/**\n * Returns a set containing all elements that are contained by both this array and the specified
collection.\n * \n * The returned set preserves the element iteration order of the original array.\n * \n * To get a set
containing all elements that are contained at least in one of these collections use [union].\n *^\npublic infix fun <T>
Array<out T>.intersect(other: Iterable<T>): Set<T> {\n    val set = this.toMutableSet()\n    set.retainAll(other)\n    return set\n}\n\n/**\n * Returns a set containing all elements that are contained by both this array and the specified
collection.\n * \n * The returned set preserves the element iteration order of the original array.\n * \n * To get a set
containing all elements that are contained at least in one of these collections use [union].\n *^\npublic infix fun
ByteArray.intersect(other: Iterable<Byte>): Set<Byte> {\n    val set = this.toMutableSet()\n    set.retainAll(other)\n    return set\n}\n\n/**\n * Returns a set containing all elements that are contained by both this array and the specified
collection.\n * \n * The returned set preserves the element iteration order of the original array.\n * \n * To get a set
containing all elements that are contained at least in one of these collections use [union].\n *^\npublic infix fun
ShortArray.intersect(other: Iterable<Short>): Set<Short> {\n    val set = this.toMutableSet()\n    set.retainAll(other)\n    return set\n}\n\n/**\n * Returns a set containing all elements that are contained by both this
array and the specified collection.\n * \n * The returned set preserves the element iteration order of the original
array.\n * \n * To get a set containing all elements that are contained at least in one of these collections use
[union].\n *^\npublic infix fun IntArray.intersect(other: Iterable<Int>): Set<Int> {\n    val set = this.toMutableSet()\n    set.retainAll(other)\n    return set\n}\n\n/**\n * Returns a set containing all elements that are contained by both this
array and the specified collection.\n * \n * The returned set preserves the element iteration order of the original
array.\n * \n * To get a set containing all elements that are contained at least in one of these collections use
[union].\n *^\npublic infix fun LongArray.intersect(other: Iterable<Long>): Set<Long> {\n    val set =
this.toMutableSet()\n    set.retainAll(other)\n    return set\n}\n\n/**\n * Returns a set containing all elements that are
contained by both this array and the specified collection.\n * \n * The returned set preserves the element iteration
order of the original array.\n * \n * To get a set containing all elements that are contained at least in one of these
collections use [union].\n *^\npublic infix fun FloatArray.intersect(other: Iterable<Float>): Set<Float> {\n    val set =
this.toMutableSet()\n    set.retainAll(other)\n    return set\n}\n\n/**\n * Returns a set containing all elements that
are contained by both this array and the specified collection.\n * \n * The returned set preserves the element iteration
order of the original array.\n * \n * To get a set containing all elements that are contained at least in one of these
collections use [union].\n *^\npublic infix fun DoubleArray.intersect(other: Iterable<Double>): Set<Double> {\n    val set =
this.toMutableSet()\n    set.retainAll(other)\n    return set\n}\n\n/**\n * Returns a set containing all
elements that are contained by both this array and the specified collection.\n * \n * The returned set preserves the
element iteration order of the original array.\n * \n * To get a set containing all elements that are contained at least
in one of these collections use [union].\n *^\npublic infix fun BooleanArray.intersect(other: Iterable<Boolean>):
Set<Boolean> {\n    val set = this.toMutableSet()\n    set.retainAll(other)\n    return set\n}\n\n/**\n * Returns a set

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containing all elements that are contained by both this array and the specified collection.

`intersect(other: Iterable<Char>): Set<Char>` {`val set = this.toMutableSet()` `set.retainAll(other)` `return set`}

Returns a set containing all elements that are contained by this array and not contained by the specified collection.

`subtract(other: Iterable<T>): Set<T>` {`val set = this.toMutableSet()` `set.removeAll(other)` `return set`}

Returns a set containing all elements that are contained by this array and not contained by the specified collection.

`subtract(other: Iterable<Byte>): Set<Byte>` {`val set = this.toMutableSet()` `set.removeAll(other)` `return set`}

Returns a set containing all elements that are contained by this array and not contained by the specified collection.

`subtract(other: Iterable<Short>): Set<Short>` {`val set = this.toMutableSet()` `set.removeAll(other)` `return set`}

Returns a set containing all elements that are contained by this array and not contained by the specified collection.

`subtract(other: Iterable<Int>): Set<Int>` {`val set = this.toMutableSet()` `set.removeAll(other)` `return set`}

Returns a set containing all elements that are contained by this array and not contained by the specified collection.

`subtract(other: Iterable<Long>): Set<Long>` {`val set = this.toMutableSet()` `set.removeAll(other)` `return set`}

Returns a set containing all elements that are contained by this array and not contained by the specified collection.

`subtract(other: Iterable<Float>): Set<Float>` {`val set = this.toMutableSet()` `set.removeAll(other)` `return set`}

Returns a set containing all elements that are contained by this array and not contained by the specified collection.

`subtract(other: Iterable<Double>): Set<Double>` {`val set = this.toMutableSet()` `set.removeAll(other)` `return set`}

Returns a set containing all elements that are contained by this array and not contained by the specified collection.

`subtract(other: Iterable<Boolean>): Set<Boolean>` {`val set = this.toMutableSet()` `set.removeAll(other)` `return set`}

Returns a set containing all elements that are contained by this array and not contained by the specified collection.

`subtract(other: Iterable<Char>): Set<Char>` {`val set = this.toMutableSet()` `set.removeAll(other)` `return set`}

Returns a mutable set containing all distinct elements from the given array.

`toMutableSet(): MutableSet<T>` {`val set = LinkedHashSet<T>(mapCapacity(size))` `for (item in this) set.add(item)` `return set`}

Returns a mutable set containing all distinct elements from the given array.

`toMutableSet(): MutableSet<Byte>` {`val set = LinkedHashSet<Byte>(mapCapacity(size))` `for (item in this) set.add(item)` `return set`}

Returns a mutable set containing all distinct elements from the given array.

`toMutableSet(): MutableSet<Short>` {`val set = LinkedHashSet<Short>(mapCapacity(size))` `for (item in this) set.add(item)` `return set`}

Returns a mutable set containing all distinct elements from the given array.

`toMutableSet(): MutableSet<Int>` {`val set = LinkedHashSet<Int>(mapCapacity(size))` `for (item in this) set.add(item)` `return set`}

Returns a mutable set containing all distinct elements from the given array.

`toMutableSet(): MutableSet<Long>` {`val set = LinkedHashSet<Long>(mapCapacity(size))` `for`

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(item in this) set.add(item)\n    return set\n}\n\n/**\n * Returns a mutable set containing all distinct elements from
the given array.\n * \n * The returned set preserves the element iteration order of the original array.\n */\npublic fun
FloatArray.toMutableSet(): MutableSet<Float> {\n    val set = LinkedHashSet<Float>(mapCapacity(size))\n    for
(item in this) set.add(item)\n    return set\n}\n\n/**\n * Returns a mutable set containing all distinct elements from
the given array.\n * \n * The returned set preserves the element iteration order of the original array.\n */\npublic fun
DoubleArray.toMutableSet(): MutableSet<Double> {\n    val set = LinkedHashSet<Double>(mapCapacity(size))\n    for
(item in this) set.add(item)\n    return set\n}\n\n/**\n * Returns a mutable set containing all distinct elements
from the given array.\n * \n * The returned set preserves the element iteration order of the original array.\n */\n
public fun BooleanArray.toMutableSet(): MutableSet<Boolean> {\n    val set =
LinkedHashSet<Boolean>(mapCapacity(size))\n    for (item in this) set.add(item)\n    return set\n}\n\n/**\n *
Returns a mutable set containing all distinct elements from the given array.\n * \n * The returned set preserves the
element iteration order of the original array.\n */\npublic fun CharArray.toMutableSet(): MutableSet<Char> {\n
val set = LinkedHashSet<Char>(mapCapacity(size))\n    for (item in this) set.add(item)\n    return set\n}\n\n/**\n
* Returns a set containing all distinct elements from both collections.\n * \n * The returned set preserves the element
iteration order of the original array.\n * Those elements of the [other] collection that are unique are iterated in the
end\n * in the order of the [other] collection.\n * \n * To get a set containing all elements that are contained in both
collections use [intersect].\n */\npublic infix fun <T> Array<out T>.union(other: Iterable<T>): Set<T> {\n    val set
= this.toMutableSet()\n    set.addAll(other)\n    return set\n}\n\n/**\n * Returns a set containing all distinct elements
from both collections.\n * \n * The returned set preserves the element iteration order of the original array.\n * Those
elements of the [other] collection that are unique are iterated in the end\n * in the order of the [other] collection.\n
* \n * To get a set containing all elements that are contained in both collections use [intersect].\n */\npublic infix fun
ByteArray.union(other: Iterable<Byte>): Set<Byte> {\n    val set = this.toMutableSet()\n    set.addAll(other)\n
return set\n}\n\n/**\n * Returns a set containing all distinct elements from both collections.\n * \n * The returned set
preserves the element iteration order of the original array.\n * Those elements of the [other] collection that are
unique are iterated in the end\n * in the order of the [other] collection.\n * \n * To get a set containing all elements
that are contained in both collections use [intersect].\n */\npublic infix fun ShortArray.union(other:
Iterable<Short>): Set<Short> {\n    val set = this.toMutableSet()\n    set.addAll(other)\n    return set\n}\n\n/**\n
* Returns a set containing all distinct elements from both collections.\n * \n * The returned set preserves the element
iteration order of the original array.\n * Those elements of the [other] collection that are unique are iterated in the
end\n * in the order of the [other] collection.\n * \n * To get a set containing all elements that are contained in both
collections use [intersect].\n */\npublic infix fun IntArray.union(other: Iterable<Int>): Set<Int> {\n    val set =
this.toMutableSet()\n    set.addAll(other)\n    return set\n}\n\n/**\n * Returns a set containing all distinct elements
from both collections.\n * \n * The returned set preserves the element iteration order of the original array.\n * Those
elements of the [other] collection that are unique are iterated in the end\n * in the order of the [other] collection.\n
* \n * To get a set containing all elements that are contained in both collections use [intersect].\n */\npublic infix fun
LongArray.union(other: Iterable<Long>): Set<Long> {\n    val set = this.toMutableSet()\n    set.addAll(other)\n
return set\n}\n\n/**\n * Returns a set containing all distinct elements from both collections.\n * \n * The returned set
preserves the element iteration order of the original array.\n * Those elements of the [other] collection that are
unique are iterated in the end\n * in the order of the [other] collection.\n * \n * To get a set containing all elements
that are contained in both collections use [intersect].\n */\npublic infix fun FloatArray.union(other: Iterable<Float>):
Set<Float> {\n    val set = this.toMutableSet()\n    set.addAll(other)\n    return set\n}\n\n/**\n * Returns a set
containing all distinct elements from both collections.\n * \n * The returned set preserves the element iteration order
of the original array.\n * Those elements of the [other] collection that are unique are iterated in the end\n * in the
order of the [other] collection.\n * \n * To get a set containing all elements that are contained in both collections use
[intersect].\n */\npublic infix fun DoubleArray.union(other: Iterable<Double>): Set<Double> {\n    val set =
this.toMutableSet()\n    set.addAll(other)\n    return set\n}\n\n/**\n * Returns a set containing all distinct elements
from both collections.\n * \n * The returned set preserves the element iteration order of the original array.\n * Those
elements of the [other] collection that are unique are iterated in the end\n * in the order of the [other] collection.\n
* \n * To get a set containing all elements that are contained in both collections use [intersect].\n */\n

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\n * To get a set containing all elements that are contained in both collections use [intersect].\n *
\npublic infix fun BooleanArray.union(other: Iterable<Boolean>): Set<Boolean> {\n    val set = this.toMutableSet()\n    set.addAll(other)\n    return set}\n\n\n * Returns a set containing all distinct elements from both collections.\n *
\n * The returned set preserves the element iteration order of the original array.\n * Those elements of the [other] collection that are unique are iterated in the end\n * in the order of the [other] collection.\n *
\n * To get a set containing all elements that are contained in both collections use [intersect].\n *
\npublic infix fun CharArray.union(other: Iterable<Char>): Set<Char> {\n    val set = this.toMutableSet()\n    set.addAll(other)\n    return set}\n\n\n * Returns `true` if all elements match the given [predicate].\n *
\n * @sample samples.collections.Collections.Aggregates.all\n *
\npublic inline fun <T> Array<out T>.all(predicate: (T) -> Boolean): Boolean {\n    for (element in this) if (!predicate(element)) return false\n    return true}\n\n\n * Returns `true` if all elements match the given [predicate].\n *
\n * @sample samples.collections.Collections.Aggregates.all\n *
\npublic inline fun ByteArray.all(predicate: (Byte) -> Boolean): Boolean {\n    for (element in this) if (!predicate(element)) return false\n    return true}\n\n\n * Returns `true` if all elements match the given [predicate].\n *
\n * @sample samples.collections.Collections.Aggregates.all\n *
\npublic inline fun ShortArray.all(predicate: (Short) -> Boolean): Boolean {\n    for (element in this) if (!predicate(element)) return false\n    return true}\n\n\n * Returns `true` if all elements match the given [predicate].\n *
\n * @sample samples.collections.Collections.Aggregates.all\n *
\npublic inline fun IntArray.all(predicate: (Int) -> Boolean): Boolean {\n    for (element in this) if (!predicate(element)) return false\n    return true}\n\n\n * Returns `true` if all elements match the given [predicate].\n *
\n * @sample samples.collections.Collections.Aggregates.all\n *
\npublic inline fun LongArray.all(predicate: (Long) -> Boolean): Boolean {\n    for (element in this) if (!predicate(element)) return false\n    return true}\n\n\n * Returns `true` if all elements match the given [predicate].\n *
\n * @sample samples.collections.Collections.Aggregates.all\n *
\npublic inline fun FloatArray.all(predicate: (Float) -> Boolean): Boolean {\n    for (element in this) if (!predicate(element)) return false\n    return true}\n\n\n * Returns `true` if all elements match the given [predicate].\n *
\n * @sample samples.collections.Collections.Aggregates.all\n *
\npublic inline fun DoubleArray.all(predicate: (Double) -> Boolean): Boolean {\n    for (element in this) if (!predicate(element)) return false\n    return true}\n\n\n * Returns `true` if all elements match the given [predicate].\n *
\n * @sample samples.collections.Collections.Aggregates.all\n *
\npublic inline fun BooleanArray.all(predicate: (Boolean) -> Boolean): Boolean {\n    for (element in this) if (!predicate(element)) return false\n    return true}\n\n\n * Returns `true` if all elements match the given [predicate].\n *
\n * @sample samples.collections.Collections.Aggregates.all\n *
\npublic inline fun CharArray.all(predicate: (Char) -> Boolean): Boolean {\n    for (element in this) if (!predicate(element)) return false\n    return true}\n\n\n * Returns `true` if array has at least one element.\n *
\n * @sample samples.collections.Collections.Aggregates.any\n *
\npublic fun <T> Array<out T>.any(): Boolean {\n    return !isEmpty()\n}\n\n\n * Returns `true` if array has at least one element.\n *
\n * @sample samples.collections.Collections.Aggregates.any\n *
\npublic fun ByteArray.any(): Boolean {\n    return !isEmpty()\n}\n\n\n * Returns `true` if array has at least one element.\n *
\n * @sample samples.collections.Collections.Aggregates.any\n *
\npublic fun ShortArray.any(): Boolean {\n    return !isEmpty()\n}\n\n\n * Returns `true` if array has at least one element.\n *
\n * @sample samples.collections.Collections.Aggregates.any\n *
\npublic fun IntArray.any(): Boolean {\n    return !isEmpty()\n}\n\n\n * Returns `true` if array has at least one element.\n *
\n * @sample samples.collections.Collections.Aggregates.any\n *
\npublic fun LongArray.any(): Boolean {\n    return !isEmpty()\n}\n\n\n * Returns `true` if array has at least one element.\n *
\n * @sample samples.collections.Collections.Aggregates.any\n *
\npublic fun FloatArray.any(): Boolean {\n    return !isEmpty()\n}\n\n\n * Returns `true` if array has at least one element.\n *
\n * @sample samples.collections.Collections.Aggregates.any\n *
\npublic fun DoubleArray.any(): Boolean {\n    return !isEmpty()\n}\n\n\n * Returns `true` if array has at least one element.\n *
\n * @sample samples.collections.Collections.Aggregates.any\n *
\npublic fun BooleanArray.any(): Boolean {\n    return !isEmpty()\n}\n\n\n * Returns `true` if array has at least one element.\n *
\n * @sample

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samples.collections.Collections.Aggregates.any\n *^\npublic fun CharArray.any(): Boolean {\n  return
!isEmpty()\n}\n\n/**\n * Returns `true` if at least one element matches the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.anyWithPredicate\n *^\npublic inline fun <T> Array<out
T>.any(predicate: (T) -> Boolean): Boolean {\n  for (element in this) if (predicate(element)) return true\n  return
false\n}\n\n/**\n * Returns `true` if at least one element matches the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.anyWithPredicate\n *^\npublic inline fun ByteArray.any(predicate:
(Byte) -> Boolean): Boolean {\n  for (element in this) if (predicate(element)) return true\n  return
false\n}\n\n/**\n * Returns `true` if at least one element matches the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.anyWithPredicate\n *^\npublic inline fun ShortArray.any(predicate:
(Short) -> Boolean): Boolean {\n  for (element in this) if (predicate(element)) return true\n  return
false\n}\n\n/**\n * Returns `true` if at least one element matches the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.anyWithPredicate\n *^\npublic inline fun IntArray.any(predicate: (Int) -
> Boolean): Boolean {\n  for (element in this) if (predicate(element)) return true\n  return false\n}\n\n/**\n *
Returns `true` if at least one element matches the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.anyWithPredicate\n *^\npublic inline fun LongArray.any(predicate:
(Long) -> Boolean): Boolean {\n  for (element in this) if (predicate(element)) return true\n  return
false\n}\n\n/**\n * Returns `true` if at least one element matches the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.anyWithPredicate\n *^\npublic inline fun FloatArray.any(predicate:
(Float) -> Boolean): Boolean {\n  for (element in this) if (predicate(element)) return true\n  return
false\n}\n\n/**\n * Returns `true` if at least one element matches the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.anyWithPredicate\n *^\npublic inline fun DoubleArray.any(predicate:
(Double) -> Boolean): Boolean {\n  for (element in this) if (predicate(element)) return true\n  return
false\n}\n\n/**\n * Returns `true` if at least one element matches the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.anyWithPredicate\n *^\npublic inline fun BooleanArray.any(predicate:
(Boolean) -> Boolean): Boolean {\n  for (element in this) if (predicate(element)) return true\n  return
false\n}\n\n/**\n * Returns `true` if at least one element matches the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.anyWithPredicate\n *^\npublic inline fun CharArray.any(predicate:
(Char) -> Boolean): Boolean {\n  for (element in this) if (predicate(element)) return true\n  return
false\n}\n\n/**\n * Returns the number of elements in this array.\n * \n *^\n@kotlin.internal.InlineOnly\npublic inline
fun <T> Array<out T>.count(): Int {\n  return size\n}\n\n/**\n * Returns the number of elements in this array.\n * \n *^\n@kotlin.internal.InlineOnly\npublic inline fun ByteArray.count(): Int {\n  return size\n}\n\n/**\n * Returns the
number of elements in this array.\n * \n *^\n@kotlin.internal.InlineOnly\npublic inline fun ShortArray.count(): Int {\n
return size\n}\n\n/**\n * Returns the number of elements in this array.\n * \n *^\n@kotlin.internal.InlineOnly\npublic
inline fun IntArray.count(): Int {\n  return size\n}\n\n/**\n * Returns the number of elements in this array.\n * \n *^\n@kotlin.internal.InlineOnly\npublic inline fun LongArray.count(): Int {\n  return size\n}\n\n/**\n * Returns the
number of elements in this array.\n * \n *^\n@kotlin.internal.InlineOnly\npublic inline fun FloatArray.count(): Int {\n
return size\n}\n\n/**\n * Returns the number of elements in this array.\n * \n *^\n@kotlin.internal.InlineOnly\npublic
inline fun DoubleArray.count(): Int {\n  return size\n}\n\n/**\n * Returns the number of elements in this array.\n * \n *^\n@kotlin.internal.InlineOnly\npublic inline fun BooleanArray.count(): Int {\n  return size\n}\n\n/**\n * Returns
the number of elements in this array.\n * \n *^\n@kotlin.internal.InlineOnly\npublic inline fun CharArray.count(): Int {\n
return size\n}\n\n/**\n * Returns the number of elements matching the given [predicate].\n * \n *^\npublic inline fun
<T> Array<out T>.count(predicate: (T) -> Boolean): Int {\n  var count = 0\n  for (element in this) if
(predicate(element)) ++count\n  return count\n}\n\n/**\n * Returns the number of elements matching the given
[predicate].\n * \n *^\npublic inline fun ByteArray.count(predicate: (Byte) -> Boolean): Int {\n  var count = 0\n
for (element in this) if (predicate(element)) ++count\n  return count\n}\n\n/**\n * Returns the number of elements
matching the given [predicate].\n * \n *^\npublic inline fun ShortArray.count(predicate: (Short) -> Boolean): Int {\n
var count = 0\n  for (element in this) if (predicate(element)) ++count\n  return count\n}\n\n/**\n * Returns the
number of elements matching the given [predicate].\n * \n *^\npublic inline fun IntArray.count(predicate: (Int) ->

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Boolean): Int {\n  var count = 0\n  for (element in this) if (predicate(element)) ++count\n  return
count\n}\n\n/**\n * Returns the number of elements matching the given [predicate].\n */\npublic inline fun
LongArray.count(predicate: (Long) -> Boolean): Int {\n  var count = 0\n  for (element in this) if
(predicate(element)) ++count\n  return count\n}\n\n/**\n * Returns the number of elements matching the given
[predicate].\n */\npublic inline fun FloatArray.count(predicate: (Float) -> Boolean): Int {\n  var count = 0\n  for
(element in this) if (predicate(element)) ++count\n  return count\n}\n\n/**\n * Returns the number of elements
matching the given [predicate].\n */\npublic inline fun DoubleArray.count(predicate: (Double) -> Boolean): Int {\n
var count = 0\n  for (element in this) if (predicate(element)) ++count\n  return count\n}\n\n/**\n * Returns the
number of elements matching the given [predicate].\n */\npublic inline fun BooleanArray.count(predicate: (Boolean)
-> Boolean): Int {\n  var count = 0\n  for (element in this) if (predicate(element)) ++count\n  return
count\n}\n\n/**\n * Returns the number of elements matching the given [predicate].\n */\npublic inline fun
CharArray.count(predicate: (Char) -> Boolean): Int {\n  var count = 0\n  for (element in this) if
(predicate(element)) ++count\n  return count\n}\n\n/**\n * Accumulates value starting with [initial] value and
applying [operation] from left to right to current accumulator value and each element.\n */\npublic inline fun <T, R>
Array<out T>.fold(initial: R, operation: (acc: R, T) -> R): R {\n  var accumulator = initial\n  for (element in this)
accumulator = operation(accumulator, element)\n  return accumulator\n}\n\n/**\n * Accumulates value starting
with [initial] value and applying [operation] from left to right to current accumulator value and each element.\n */\n
public inline fun <R> ByteArray.fold(initial: R, operation: (acc: R, Byte) -> R): R {\n  var accumulator =
initial\n  for (element in this) accumulator = operation(accumulator, element)\n  return accumulator\n}\n\n/**\n *
Accumulates value starting with [initial] value and applying [operation] from left to right to current accumulator
value and each element.\n */\npublic inline fun <R> ShortArray.fold(initial: R, operation: (acc: R, Short) -> R): R
{\n  var accumulator = initial\n  for (element in this) accumulator = operation(accumulator, element)\n  return
accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying [operation] from left to right
to current accumulator value and each element.\n */\npublic inline fun <R> IntArray.fold(initial: R, operation: (acc:
R, Int) -> R): R {\n  var accumulator = initial\n  for (element in this) accumulator = operation(accumulator,
element)\n  return accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying
[operation] from left to right to current accumulator value and each element.\n */\npublic inline fun <R>
LongArray.fold(initial: R, operation: (acc: R, Long) -> R): R {\n  var accumulator = initial\n  for (element in this)
accumulator = operation(accumulator, element)\n  return accumulator\n}\n\n/**\n * Accumulates value starting
with [initial] value and applying [operation] from left to right to current accumulator value and each element.\n */\n
public inline fun <R> FloatArray.fold(initial: R, operation: (acc: R, Float) -> R): R {\n  var accumulator =
initial\n  for (element in this) accumulator = operation(accumulator, element)\n  return accumulator\n}\n\n/**\n *
Accumulates value starting with [initial] value and applying [operation] from left to right to current accumulator
value and each element.\n */\npublic inline fun <R> DoubleArray.fold(initial: R, operation: (acc: R, Double) -> R):
R {\n  var accumulator = initial\n  for (element in this) accumulator = operation(accumulator, element)\n  return
accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying [operation] from left to right
to current accumulator value and each element.\n */\npublic inline fun <R> BooleanArray.fold(initial: R, operation:
(acc: R, Boolean) -> R): R {\n  var accumulator = initial\n  for (element in this) accumulator =
operation(accumulator, element)\n  return accumulator\n}\n\n/**\n * Accumulates value starting with [initial]
value and applying [operation] from left to right to current accumulator value and each element.\n */\npublic inline
fun <R> CharArray.fold(initial: R, operation: (acc: R, Char) -> R): R {\n  var accumulator = initial\n  for (element
in this) accumulator = operation(accumulator, element)\n  return accumulator\n}\n\n/**\n * Accumulates value
starting with [initial] value and applying [operation] from left to right\n * to current accumulator value and each
element with its index in the original array.\n * @param [operation] function that takes the index of an element,
current accumulator value\n * and the element itself, and calculates the next accumulator value.\n */\npublic inline
fun <T, R> Array<out T>.foldIndexed(initial: R, operation: (index: Int, acc: R, T) -> R): R {\n  var index = 0\n
var accumulator = initial\n  for (element in this) accumulator = operation(index++, accumulator, element)\n
return accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying [operation] from left

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to right\n \* to current accumulator value and each element with its index in the original array.\n \* @param [operation] function that takes the index of an element, current accumulator value\n \* and the element itself, and calculates the next accumulator value.\n \*/\npublic inline fun <R> ByteArray.foldIndexed(initial: R, operation: (index: Int, acc: R, Byte) -> R): R {\n var index = 0\n var accumulator = initial\n for (element in this) accumulator = operation(index++, accumulator, element)\n return accumulator\n}\n\n/\*\*\n \* Accumulates value starting with [initial] value and applying [operation] from left to right\n \* to current accumulator value and each element with its index in the original array.\n \* @param [operation] function that takes the index of an element, current accumulator value\n \* and the element itself, and calculates the next accumulator value.\n \*/\npublic inline fun <R> ShortArray.foldIndexed(initial: R, operation: (index: Int, acc: R, Short) -> R): R {\n var index = 0\n var accumulator = initial\n for (element in this) accumulator = operation(index++, accumulator, element)\n return accumulator\n}\n\n/\*\*\n \* Accumulates value starting with [initial] value and applying [operation] from left to right\n \* to current accumulator value and each element with its index in the original array.\n \* @param [operation] function that takes the index of an element, current accumulator value\n \* and the element itself, and calculates the next accumulator value.\n \*/\npublic inline fun <R> IntArray.foldIndexed(initial: R, operation: (index: Int, acc: R, Int) -> R): R {\n var index = 0\n var accumulator = initial\n for (element in this) accumulator = operation(index++, accumulator, element)\n return accumulator\n}\n\n/\*\*\n \* Accumulates value starting with [initial] value and applying [operation] from left to right\n \* to current accumulator value and each element with its index in the original array.\n \* @param [operation] function that takes the index of an element, current accumulator value\n \* and the element itself, and calculates the next accumulator value.\n \*/\npublic inline fun <R> LongArray.foldIndexed(initial: R, operation: (index: Int, acc: R, Long) -> R): R {\n var index = 0\n var accumulator = initial\n for (element in this) accumulator = operation(index++, accumulator, element)\n return accumulator\n}\n\n/\*\*\n \* Accumulates value starting with [initial] value and applying [operation] from left to right\n \* to current accumulator value and each element with its index in the original array.\n \* @param [operation] function that takes the index of an element, current accumulator value\n \* and the element itself, and calculates the next accumulator value.\n \*/\npublic inline fun <R> FloatArray.foldIndexed(initial: R, operation: (index: Int, acc: R, Float) -> R): R {\n var index = 0\n var accumulator = initial\n for (element in this) accumulator = operation(index++, accumulator, element)\n return accumulator\n}\n\n/\*\*\n \* Accumulates value starting with [initial] value and applying [operation] from left to right\n \* to current accumulator value and each element with its index in the original array.\n \* @param [operation] function that takes the index of an element, current accumulator value\n \* and the element itself, and calculates the next accumulator value.\n \*/\npublic inline fun <R> DoubleArray.foldIndexed(initial: R, operation: (index: Int, acc: R, Double) -> R): R {\n var index = 0\n var accumulator = initial\n for (element in this) accumulator = operation(index++, accumulator, element)\n return accumulator\n}\n\n/\*\*\n \* Accumulates value starting with [initial] value and applying [operation] from left to right\n \* to current accumulator value and each element with its index in the original array.\n \* @param [operation] function that takes the index of an element, current accumulator value\n \* and the element itself, and calculates the next accumulator value.\n \*/\npublic inline fun <R> BooleanArray.foldIndexed(initial: R, operation: (index: Int, acc: R, Boolean) -> R): R {\n var index = 0\n var accumulator = initial\n for (element in this) accumulator = operation(index++, accumulator, element)\n return accumulator\n}\n\n/\*\*\n \* Accumulates value starting with [initial] value and applying [operation] from left to right\n \* to current accumulator value and each element with its index in the original array.\n \* @param [operation] function that takes the index of an element, current accumulator value\n \* and the element itself, and calculates the next accumulator value.\n \*/\npublic inline fun <R> CharArray.foldIndexed(initial: R, operation: (index: Int, acc: R, Char) -> R): R {\n var index = 0\n var accumulator = initial\n for (element in this) accumulator = operation(index++, accumulator, element)\n return accumulator\n}\n\n/\*\*\n \* Accumulates value starting with [initial] value and applying [operation] from right to left to each element and current accumulator value.\n \*/\npublic inline fun <T, R> Array<out T>.foldRight(initial: R, operation: (T, acc: R) -> R): R {\n var index = lastIndex\n var accumulator = initial\n while (index >= 0) {\n accumulator = operation(get(index--), accumulator)\n }\n return accumulator\n}\n\n/\*\*\n \* Accumulates value starting with [initial] value and applying [operation] from right to left to each element and current accumulator

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value.\n */\npublic inline fun <R> ByteArray.foldRight(initial: R, operation: (Byte, acc: R) -> R): R {\n  var index
= lastIndex\n  var accumulator = initial\n  while (index >= 0) {\n    accumulator = operation(get(index--),
accumulator)\n  }\n  return accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying
[operation] from right to left to each element and current accumulator value.\n */\npublic inline fun <R>
ShortArray.foldRight(initial: R, operation: (Short, acc: R) -> R): R {\n  var index = lastIndex\n  var accumulator =
initial\n  while (index >= 0) {\n    accumulator = operation(get(index--), accumulator)\n  }\n  return
accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying [operation] from right to left
to each element and current accumulator value.\n */\npublic inline fun <R> IntArray.foldRight(initial: R, operation:
(Int, acc: R) -> R): R {\n  var index = lastIndex\n  var accumulator = initial\n  while (index >= 0) {\n
accumulator = operation(get(index--), accumulator)\n  }\n  return accumulator\n}\n\n/**\n * Accumulates value
starting with [initial] value and applying [operation] from right to left to each element and current accumulator
value.\n */\npublic inline fun <R> LongArray.foldRight(initial: R, operation: (Long, acc: R) -> R): R {\n  var index
= lastIndex\n  var accumulator = initial\n  while (index >= 0) {\n    accumulator = operation(get(index--),
accumulator)\n  }\n  return accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying
[operation] from right to left to each element and current accumulator value.\n */\npublic inline fun <R>
FloatArray.foldRight(initial: R, operation: (Float, acc: R) -> R): R {\n  var index = lastIndex\n  var accumulator =
initial\n  while (index >= 0) {\n    accumulator = operation(get(index--), accumulator)\n  }\n  return
accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying [operation] from right to left
to each element and current accumulator value.\n */\npublic inline fun <R> DoubleArray.foldRight(initial: R,
operation: (Double, acc: R) -> R): R {\n  var index = lastIndex\n  var accumulator = initial\n  while (index >= 0)
{\n    accumulator = operation(get(index--), accumulator)\n  }\n  return accumulator\n}\n\n/**\n * Accumulates
value starting with [initial] value and applying [operation] from right to left to each element and current accumulator
value.\n */\npublic inline fun <R> BooleanArray.foldRight(initial: R, operation: (Boolean, acc: R) -> R): R {\n  var
index = lastIndex\n  var accumulator = initial\n  while (index >= 0) {\n    accumulator = operation(get(index--),
accumulator)\n  }\n  return accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying
[operation] from right to left to each element and current accumulator value.\n */\npublic inline fun <R>
CharArray.foldRight(initial: R, operation: (Char, acc: R) -> R): R {\n  var index = lastIndex\n  var accumulator =
initial\n  while (index >= 0) {\n    accumulator = operation(get(index--), accumulator)\n  }\n  return
accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying [operation] from right to
left\n * to each element with its index in the original array and current accumulator value.\n * @param [operation]
function that takes the index of an element, the element itself\n * and current accumulator value, and calculates the
next accumulator value.\n */\npublic inline fun <T, R> Array<out T>.foldRightIndexed(initial: R, operation: (index:
Int, T, acc: R) -> R): R {\n  var index = lastIndex\n  var accumulator = initial\n  while (index >= 0) {\n
accumulator = operation(index, get(index), accumulator)\n    --index\n  }\n  return accumulator\n}\n\n/**\n *
Accumulates value starting with [initial] value and applying [operation] from right to left\n * to each element with
its index in the original array and current accumulator value.\n * @param [operation] function that takes the index of
an element, the element itself\n * and current accumulator value, and calculates the next accumulator value.\n */\n
public inline fun <R> ByteArray.foldRightIndexed(initial: R, operation: (index: Int, Byte, acc: R) -> R): R {\n
var index = lastIndex\n  var accumulator = initial\n  while (index >= 0) {\n    accumulator = operation(index,
get(index), accumulator)\n    --index\n  }\n  return accumulator\n}\n\n/**\n * Accumulates value starting with
[initial] value and applying [operation] from right to left\n * to each element with its index in the original array
and current accumulator value.\n * @param [operation] function that takes the index of an element, the element itself\n
* and current accumulator value, and calculates the next accumulator value.\n */\npublic inline fun <R>
ShortArray.foldRightIndexed(initial: R, operation: (index: Int, Short, acc: R) -> R): R {\n  var index = lastIndex\n
var accumulator = initial\n  while (index >= 0) {\n    accumulator = operation(index, get(index), accumulator)\n
--index\n  }\n  return accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying
[operation] from right to left\n * to each element with its index in the original array and current accumulator
value.\n * @param [operation] function that takes the index of an element, the element itself\n * and current accumulator

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value, and calculates the next accumulator value.\n */\npublic inline fun <R> IntArray.foldRightIndexed(initial: R,
operation: (index: Int, Int, acc: R) -> R): R {\n  var index = lastIndex\n  var accumulator = initial\n  while (index
>= 0) {\n    accumulator = operation(index, get(index), accumulator)\n    --index\n  }\n  return
accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying [operation] from right to
left\n * to each element with its index in the original array and current accumulator value.\n * @param [operation]
function that takes the index of an element, the element itself\n * and current accumulator value, and calculates the
next accumulator value.\n */\npublic inline fun <R> LongArray.foldRightIndexed(initial: R, operation: (index: Int,
Long, acc: R) -> R): R {\n  var index = lastIndex\n  var accumulator = initial\n  while (index >= 0) {\n
accumulator = operation(index, get(index), accumulator)\n    --index\n  }\n  return accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying [operation] from right to left\n * to each element with
its index in the original array and current accumulator value.\n * @param [operation] function that takes the index of
an element, the element itself\n * and current accumulator value, and calculates the next accumulator value.\n */\npublic inline fun <R> FloatArray.foldRightIndexed(initial: R, operation: (index: Int, Float, acc: R) -> R): R {\n
var index = lastIndex\n  var accumulator = initial\n  while (index >= 0) {\n    accumulator = operation(index,
get(index), accumulator)\n    --index\n  }\n  return accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying [operation] from right to left\n * to each element with its index in the original array and
current accumulator value.\n * @param [operation] function that takes the index of an element, the element itself\n *
and current accumulator value, and calculates the next accumulator value.\n */\npublic inline fun <R>
DoubleArray.foldRightIndexed(initial: R, operation: (index: Int, Double, acc: R) -> R): R {\n  var index =
lastIndex\n  var accumulator = initial\n  while (index >= 0) {\n    accumulator = operation(index, get(index),
accumulator)\n    --index\n  }\n  return accumulator\n}\n\n/**\n * Accumulates value starting with [initial]
value and applying [operation] from right to left\n * to each element with its index in the original array and current
accumulator value.\n * @param [operation] function that takes the index of an element, the element itself\n * and
current accumulator value, and calculates the next accumulator value.\n */\npublic inline fun <R>
BooleanArray.foldRightIndexed(initial: R, operation: (index: Int, Boolean, acc: R) -> R): R {\n  var index =
lastIndex\n  var accumulator = initial\n  while (index >= 0) {\n    accumulator = operation(index, get(index),
accumulator)\n    --index\n  }\n  return accumulator\n}\n\n/**\n * Accumulates value starting with [initial]
value and applying [operation] from right to left\n * to each element with its index in the original array and current
accumulator value.\n * @param [operation] function that takes the index of an element, the element itself\n * and
current accumulator value, and calculates the next accumulator value.\n */\npublic inline fun <R>
CharArray.foldRightIndexed(initial: R, operation: (index: Int, Char, acc: R) -> R): R {\n  var index = lastIndex\n
var accumulator = initial\n  while (index >= 0) {\n    accumulator = operation(index, get(index), accumulator)\n
    --index\n  }\n  return accumulator\n}\n\n/**\n * Performs the given [action] on each element.\n */\npublic
inline fun <T> Array<out T>.forEach(action: (T) -> Unit): Unit {\n  for (element in this)
action(element)\n}\n\n/**\n * Performs the given [action] on each element.\n */\npublic inline fun
ByteArray.forEach(action: (Byte) -> Unit): Unit {\n  for (element in this) action(element)\n}\n\n/**\n * Performs
the given [action] on each element.\n */\npublic inline fun ShortArray.forEach(action: (Short) -> Unit): Unit {\n
for (element in this) action(element)\n}\n\n/**\n * Performs the given [action] on each element.\n */\npublic inline
fun IntArray.forEach(action: (Int) -> Unit): Unit {\n  for (element in this) action(element)\n}\n\n/**\n * Performs
the given [action] on each element.\n */\npublic inline fun LongArray.forEach(action: (Long) -> Unit): Unit {\n
for (element in this) action(element)\n}\n\n/**\n * Performs the given [action] on each element.\n */\npublic inline
fun FloatArray.forEach(action: (Float) -> Unit): Unit {\n  for (element in this) action(element)\n}\n\n/**\n *
Performs the given [action] on each element.\n */\npublic inline fun DoubleArray.forEach(action: (Double) ->
Unit): Unit {\n  for (element in this) action(element)\n}\n\n/**\n * Performs the given [action] on each element.\n
*/\npublic inline fun BooleanArray.forEach(action: (Boolean) -> Unit): Unit {\n  for (element in this)
action(element)\n}\n\n/**\n * Performs the given [action] on each element.\n */\npublic inline fun
CharArray.forEach(action: (Char) -> Unit): Unit {\n  for (element in this) action(element)\n}\n\n/**\n * Performs
the given [action] on each element, providing sequential index with the element.\n * @param [action] function that

```

takes the index of an element and the element itself and performs the desired action on the element.

```

public inline fun <T> Array<out T>.forEachIndexed(action: (index: Int, T) -> Unit): Unit {
    var index = 0
    for (item in this) action(index++, item)
}

```

Performs the given [action] on each element, providing sequential index with the element. @param [action] function that takes the index of an element and the element itself and performs the desired action on the element.

```

public inline fun ByteArray.forEachIndexed(action: (index: Int, Byte) -> Unit): Unit {
    var index = 0
    for (item in this) action(index++, item)
}

```

Performs the given [action] on each element, providing sequential index with the element. @param [action] function that takes the index of an element and the element itself and performs the desired action on the element.

```

public inline fun ShortArray.forEachIndexed(action: (index: Int, Short) -> Unit): Unit {
    var index = 0
    for (item in this) action(index++, item)
}

```

Performs the given [action] on each element, providing sequential index with the element. @param [action] function that takes the index of an element and the element itself and performs the desired action on the element.

```

public inline fun IntArray.forEachIndexed(action: (index: Int, Int) -> Unit): Unit {
    var index = 0
    for (item in this) action(index++, item)
}

```

Performs the given [action] on each element, providing sequential index with the element. @param [action] function that takes the index of an element and the element itself and performs the desired action on the element.

```

public inline fun LongArray.forEachIndexed(action: (index: Int, Long) -> Unit): Unit {
    var index = 0
    for (item in this) action(index++, item)
}

```

Performs the given [action] on each element, providing sequential index with the element. @param [action] function that takes the index of an element and the element itself and performs the desired action on the element.

```

public inline fun FloatArray.forEachIndexed(action: (index: Int, Float) -> Unit): Unit {
    var index = 0
    for (item in this) action(index++, item)
}

```

Performs the given [action] on each element, providing sequential index with the element. @param [action] function that takes the index of an element and the element itself and performs the desired action on the element.

```

public inline fun DoubleArray.forEachIndexed(action: (index: Int, Double) -> Unit): Unit {
    var index = 0
    for (item in this) action(index++, item)
}

```

Performs the given [action] on each element, providing sequential index with the element. @param [action] function that takes the index of an element and the element itself and performs the desired action on the element.

```

public inline fun BooleanArray.forEachIndexed(action: (index: Int, Boolean) -> Unit): Unit {
    var index = 0
    for (item in this) action(index++, item)
}

```

Performs the given [action] on each element, providing sequential index with the element. @param [action] function that takes the index of an element and the element itself and performs the desired action on the element.

```

public inline fun CharArray.forEachIndexed(action: (index: Int, Char) -> Unit): Unit {
    var index = 0
    for (item in this) action(index++, item)
}

```

Returns the largest element or `null` if there are no elements. If any of elements is `NaN` returns `NaN`.

```

@SinceKotlin("1.1")
public fun Array<out Double>.max(): Double? {
    if (isEmpty()) return null
    var max = this[0]
    if (max.isNaN()) return max
    for (i in 1..lastIndex) {
        val e = this[i]
        if (e.isNaN()) return e
        if (max < e) max = e
    }
    return max
}

```

Returns the largest element or `null` if there are no elements. If any of elements is `NaN` returns `NaN`.

```

@SinceKotlin("1.1")
public fun Array<out Float>.max(): Float? {
    if (isEmpty()) return null
    var max = this[0]
    if (max.isNaN()) return max
    for (i in 1..lastIndex) {
        val e = this[i]
        if (e.isNaN()) return e
        if (max < e) max = e
    }
    return max
}

```

Returns the largest element or `null` if there are no elements.

```

public fun <T : Comparable<T>> Array<out T>.max(): T? {
    if (isEmpty()) return null
    var max = this[0]
    for (i in 1..lastIndex) {
        val e = this[i]
        if (max < e) max = e
    }
    return max
}

```

Returns the largest element or `null` if there are no elements.

```

public fun ByteArray.max(): Byte? {
    if (isEmpty()) return null
    var max = this[0]
    for (i in 1..lastIndex) {
        val e = this[i]
        if (max < e) max = e
    }
    return max
}

```

Returns the largest element or `null` if there are no elements.

```

public fun ShortArray.max(): Short? {
    if (isEmpty()) return null
    var max = this[0]
    for (i in 1..lastIndex) {
        val e = this[i]
        if (max < e) max = e
    }
    return max
}

```

Returns the largest element or `null` if there are no elements.

```

public fun IntArray.max(): Int? {
    if (isEmpty()) return null
    var max = this[0]
    for (i in 1..lastIndex) {
        val e = this[i]
        if (max < e) max = e
    }
    return max
}

```

Returns the largest element or `null` if there are no elements.

```

public fun LongArray.max():

```

```

Long? { \n  if (isEmpty()) return null\n  var max = this[0]\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    if (max < e) max = e\n  }\n  return max\n}\n\n/**\n * Returns the largest element or `null` if there are no elements.\n * \n * If any of elements is `NaN` returns `NaN`.\n */\n\npublic fun FloatArray.max(): Float? {\n  if (isEmpty())\n    return null\n  var max = this[0]\n  if (max.isNaN()) return max\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    if (e.isNaN()) return e\n    if (max < e) max = e\n  }\n  return max\n}\n\n/**\n * Returns the largest element or `null` if there are no elements.\n * \n * If any of elements is `NaN` returns `NaN`.\n */\n\npublic fun\nDoubleArray.max(): Double? {\n  if (isEmpty()) return null\n  var max = this[0]\n  if (max.isNaN()) return\nmax\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    if (e.isNaN()) return e\n    if (max < e) max = e\n  }\n  return max\n}\n\n/**\n * Returns the largest element or `null` if there are no elements.\n */\n\npublic fun\nCharArray.max(): Char? {\n  if (isEmpty()) return null\n  var max = this[0]\n  for (i in 1..lastIndex) {\n    val e\n= this[i]\n    if (max < e) max = e\n  }\n  return max\n}\n\n/**\n * Returns the first element yielding the largest\nvalue of the given function or `null` if there are no elements.\n * \n * @sample\nsamples.collections.Collections.Aggregates.maxBy\n */\n\npublic inline fun <T, R : Comparable<R>> Array<out\nT>.maxBy(selector: (T) -> R): T? {\n  if (isEmpty()) return null\n  var maxElem = this[0]\n  val lastIndex =\nthis.lastIndex\n  if (lastIndex == 0) return maxElem\n  var maxV = selector(maxElem)\n  for (i in\n1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (maxV < v) {\n      maxElem = e\n      maxV = v\n    }\n  }\n  return maxElem\n}\n\n/**\n * Returns the first element yielding the largest value\nof the given function or `null` if there are no elements.\n * \n * @sample\nsamples.collections.Collections.Aggregates.maxBy\n */\n\npublic inline fun <R : Comparable<R>>\nByteArray.maxBy(selector: (Byte) -> R): Byte? {\n  if (isEmpty()) return null\n  var maxElem = this[0]\n  val\nlastIndex = this.lastIndex\n  if (lastIndex == 0) return maxElem\n  var maxV = selector(maxElem)\n  for (i\nin 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (maxV < v) {\n      maxElem = e\n      maxV = v\n    }\n  }\n  return maxElem\n}\n\n/**\n * Returns the first element yielding the largest value\nof the given function or `null` if there are no elements.\n * \n * @sample\nsamples.collections.Collections.Aggregates.maxBy\n */\n\npublic inline fun <R : Comparable<R>>\nShortArray.maxBy(selector: (Short) -> R): Short? {\n  if (isEmpty()) return null\n  var maxElem = this[0]\n  val\nlastIndex = this.lastIndex\n  if (lastIndex == 0) return maxElem\n  var maxV = selector(maxElem)\n  for (i\nin 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (maxV < v) {\n      maxElem = e\n      maxV = v\n    }\n  }\n  return maxElem\n}\n\n/**\n * Returns the first element yielding the largest value\nof the given function or `null` if there are no elements.\n * \n * @sample\nsamples.collections.Collections.Aggregates.maxBy\n */\n\npublic inline fun <R : Comparable<R>>\nIntArray.maxBy(selector: (Int) -> R): Int? {\n  if (isEmpty()) return null\n  var maxElem = this[0]\n  val\nlastIndex = this.lastIndex\n  if (lastIndex == 0) return maxElem\n  var maxV = selector(maxElem)\n  for (i\nin 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (maxV < v) {\n      maxElem = e\n      maxV = v\n    }\n  }\n  return maxElem\n}\n\n/**\n * Returns the first element yielding the largest value\nof the given function or `null` if there are no elements.\n * \n * @sample\nsamples.collections.Collections.Aggregates.maxBy\n */\n\npublic inline fun <R : Comparable<R>>\nLongArray.maxBy(selector: (Long) -> R): Long? {\n  if (isEmpty()) return null\n  var maxElem = this[0]\n  val\nlastIndex = this.lastIndex\n  if (lastIndex == 0) return maxElem\n  var maxV = selector(maxElem)\n  for (i\nin 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (maxV < v) {\n      maxElem = e\n      maxV = v\n    }\n  }\n  return maxElem\n}\n\n/**\n * Returns the first element yielding the largest value\nof the given function or `null` if there are no elements.\n * \n * @sample\nsamples.collections.Collections.Aggregates.maxBy\n */\n\npublic inline fun <R : Comparable<R>>\nFloatArray.maxBy(selector: (Float) -> R): Float? {\n  if (isEmpty()) return null\n  var maxElem = this[0]\n  val\nlastIndex = this.lastIndex\n  if (lastIndex == 0) return maxElem\n  var maxV = selector(maxElem)\n  for (i\nin 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (maxV < v) {\n      maxElem = e\n      maxV = v\n    }\n  }\n  return maxElem\n}\n\n/**\n * Returns the first element yielding the largest value\nof the given function or `null` if there are no elements.\n * \n * @sample

```

```

samples.collections.Collections.Aggregates.maxBy\n */\npublic inline fun <R : Comparable<R>>
DoubleArray.maxBy(selector: (Double) -> R): Double? {\n if (isEmpty()) return null\n var maxElem = this[0]\n val lastIndex = this.lastIndex\n if (lastIndex == 0) return maxElem\n var maxValue = selector(maxElem)\n for (i in 1..lastIndex) {\n val e = this[i]\n val v = selector(e)\n if (maxValue < v) {\n maxElem = e\n maxValue = v\n }\n }\n return maxElem\n}\n\n/**\n * Returns the first element yielding the largest value of the given function or `null` if there are no elements.\n *\n * @sample
samples.collections.Collections.Aggregates.maxBy\n */\npublic inline fun <R : Comparable<R>>
BooleanArray.maxBy(selector: (Boolean) -> R): Boolean? {\n if (isEmpty()) return null\n var maxElem = this[0]\n val lastIndex = this.lastIndex\n if (lastIndex == 0) return maxElem\n var maxValue = selector(maxElem)\n for (i in 1..lastIndex) {\n val e = this[i]\n val v = selector(e)\n if (maxValue < v) {\n maxElem = e\n maxValue = v\n }\n }\n return maxElem\n}\n\n/**\n * Returns the first element yielding the largest value of the given function or `null` if there are no elements.\n *\n * @sample
samples.collections.Collections.Aggregates.maxBy\n */\npublic inline fun <R : Comparable<R>>
CharArray.maxBy(selector: (Char) -> R): Char? {\n if (isEmpty()) return null\n var maxElem = this[0]\n val lastIndex = this.lastIndex\n if (lastIndex == 0) return maxElem\n var maxValue = selector(maxElem)\n for (i in 1..lastIndex) {\n val e = this[i]\n val v = selector(e)\n if (maxValue < v) {\n maxElem = e\n maxValue = v\n }\n }\n return maxElem\n}\n\n/**\n * Returns the first element having the largest value according to the provided [comparator] or `null` if there are no elements.\n *\n * @public fun <T> Array<out T>.maxWith(comparator: Comparator<in T>): T? {\n if (isEmpty()) return null\n var max = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if (comparator.compare(max, e) < 0) max = e\n }\n return max\n}\n\n/**\n * Returns the first element having the largest value according to the provided [comparator] or `null` if there are no elements.\n *\n * @public fun ByteArray.maxWith(comparator: Comparator<in Byte>): Byte? {\n if (isEmpty()) return null\n var max = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if (comparator.compare(max, e) < 0) max = e\n }\n return max\n}\n\n/**\n * Returns the first element having the largest value according to the provided [comparator] or `null` if there are no elements.\n *\n * @public fun ShortArray.maxWith(comparator: Comparator<in Short>): Short? {\n if (isEmpty()) return null\n var max = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if (comparator.compare(max, e) < 0) max = e\n }\n return max\n}\n\n/**\n * Returns the first element having the largest value according to the provided [comparator] or `null` if there are no elements.\n *\n * @public fun IntArray.maxWith(comparator: Comparator<in Int>): Int? {\n if (isEmpty()) return null\n var max = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if (comparator.compare(max, e) < 0) max = e\n }\n return max\n}\n\n/**\n * Returns the first element having the largest value according to the provided [comparator] or `null` if there are no elements.\n *\n * @public fun LongArray.maxWith(comparator: Comparator<in Long>): Long? {\n if (isEmpty()) return null\n var max = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if (comparator.compare(max, e) < 0) max = e\n }\n return max\n}\n\n/**\n * Returns the first element having the largest value according to the provided [comparator] or `null` if there are no elements.\n *\n * @public fun FloatArray.maxWith(comparator: Comparator<in Float>): Float? {\n if (isEmpty()) return null\n var max = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if (comparator.compare(max, e) < 0) max = e\n }\n return max\n}\n\n/**\n * Returns the first element having the largest value according to the provided [comparator] or `null` if there are no elements.\n *\n * @public fun DoubleArray.maxWith(comparator: Comparator<in Double>): Double? {\n if (isEmpty()) return null\n var max = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if (comparator.compare(max, e) < 0) max = e\n }\n return max\n}\n\n/**\n * Returns the first element having the largest value according to the provided [comparator] or `null` if there are no elements.\n *\n * @public fun BooleanArray.maxWith(comparator: Comparator<in Boolean>): Boolean? {\n if (isEmpty()) return null\n var max = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if (comparator.compare(max, e) < 0) max = e\n }\n return max\n}\n\n/**\n * Returns the first element having the largest value according to the provided [comparator] or `null` if there are no elements.\n *\n * @public fun CharArray.maxWith(comparator: Comparator<in Char>): Char? {\n if (isEmpty()) return null\n var max = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if (comparator.compare(max, e) < 0) max = e\n }\n return max\n}\n\n/**\n * Returns the first element having the largest value according to the provided [comparator] or `null` if there are no elements.\n *\n * @public

```

```

return min\n\n\n * Returns the smallest element or `null` if there are no elements.\n * \n * If any of elements
is `NaN` returns `NaN`.\n * \n @SinceKotlin("1.1")\npublic fun Array<out Double>.min(): Double? {\n if
(isEmpty()) return null\n var min = this[0]\n if (min.isNaN()) return min\n for (i in 1..lastIndex) {\n val e =
this[i]\n if (e.isNaN()) return e\n if (min > e) min = e\n }\n return min\n}\n\n * Returns the
smallest element or `null` if there are no elements.\n * \n * If any of elements is `NaN` returns `NaN`.\n
*\n @SinceKotlin("1.1")\npublic fun Array<out Float>.min(): Float? {\n if (isEmpty()) return null\n var min =
this[0]\n if (min.isNaN()) return min\n for (i in 1..lastIndex) {\n val e = this[i]\n if (e.isNaN()) return e\n
if (min > e) min = e\n }\n return min\n}\n\n * Returns the smallest element or `null` if there are no
elements.\n * \n public fun <T : Comparable<T>> Array<out T>.min(): T? {\n if (isEmpty()) return null\n var
min = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if (min > e) min = e\n }\n return
min\n}\n\n * Returns the smallest element or `null` if there are no elements.\n * \n public fun ByteArray.min():
Byte? {\n if (isEmpty()) return null\n var min = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if
(min > e) min = e\n }\n return min\n}\n\n * Returns the smallest element or `null` if there are no
elements.\n * \n public fun ShortArray.min(): Short? {\n if (isEmpty()) return null\n var min = this[0]\n for (i in
1..lastIndex) {\n val e = this[i]\n if (min > e) min = e\n }\n return min\n}\n\n * Returns the smallest
element or `null` if there are no elements.\n * \n public fun IntArray.min(): Int? {\n if (isEmpty()) return null\n
var min = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if (min > e) min = e\n }\n return
min\n}\n\n * Returns the smallest element or `null` if there are no elements.\n * \n public fun LongArray.min():
Long? {\n if (isEmpty()) return null\n var min = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if
(min > e) min = e\n }\n return min\n}\n\n * Returns the smallest element or `null` if there are no
elements.\n * \n * If any of elements is `NaN` returns `NaN`.\n * \n public fun FloatArray.min(): Float? {\n if
(isEmpty()) return null\n var min = this[0]\n if (min.isNaN()) return min\n for (i in 1..lastIndex) {\n val e =
this[i]\n if (e.isNaN()) return e\n if (min > e) min = e\n }\n return min\n}\n\n * Returns the
smallest element or `null` if there are no elements.\n * \n * If any of elements is `NaN` returns `NaN`.\n * \n
public fun DoubleArray.min(): Double? {\n if (isEmpty()) return null\n var min = this[0]\n if (min.isNaN()) return
min\n for (i in 1..lastIndex) {\n val e = this[i]\n if (e.isNaN()) return e\n if (min > e) min = e\n }\n
return min\n}\n\n * Returns the smallest element or `null` if there are no elements.\n * \n public fun
CharArray.min(): Char? {\n if (isEmpty()) return null\n var min = this[0]\n for (i in 1..lastIndex) {\n val e
= this[i]\n if (min > e) min = e\n }\n return min\n}\n\n * Returns the first element yielding the smallest
value of the given function or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.minBy\n * \n public inline fun <T, R : Comparable<R>> Array<out
T>.minBy(selector: (T) -> R): T? {\n if (isEmpty()) return null\n var minElem = this[0]\n val lastIndex =
this.lastIndex\n if (lastIndex == 0) return minElem\n var minValue = selector(minElem)\n for (i in
1..lastIndex) {\n val e = this[i]\n val v = selector(e)\n if (minValue > v) {\n minElem = e\n
minValue = v\n }\n }\n return minElem\n}\n\n * Returns the first element yielding the smallest value
of the given function or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.minBy\n * \n public inline fun <R : Comparable<R>>
ByteArray.minBy(selector: (Byte) -> R): Byte? {\n if (isEmpty()) return null\n var minElem = this[0]\n val
lastIndex = this.lastIndex\n if (lastIndex == 0) return minElem\n var minValue = selector(minElem)\n for (i in
1..lastIndex) {\n val e = this[i]\n val v = selector(e)\n if (minValue > v) {\n minElem = e\n
minValue = v\n }\n }\n return minElem\n}\n\n * Returns the first element yielding the smallest value
of the given function or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.minBy\n * \n public inline fun <R : Comparable<R>>
ShortArray.minBy(selector: (Short) -> R): Short? {\n if (isEmpty()) return null\n var minElem = this[0]\n val
lastIndex = this.lastIndex\n if (lastIndex == 0) return minElem\n var minValue = selector(minElem)\n for (i in
1..lastIndex) {\n val e = this[i]\n val v = selector(e)\n if (minValue > v) {\n minElem = e\n
minValue = v\n }\n }\n return minElem\n}\n\n * Returns the first element yielding the smallest value
of the given function or `null` if there are no elements.\n * \n * @sample

```

```

samples.collections.Collections.Aggregates.minBy\n *\npublic inline fun <R : Comparable<R>>
IntArray.minBy(selector: (Int) -> R): Int? {\n  if (isEmpty()) return null\n  var minElem = this[0]\n  val lastIndex = this.lastIndex\n  if (lastIndex == 0) return minElem\n  var minValue = selector(minElem)\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (minValue > v) {\n      minElem = e\n      minValue = v\n    }\n  }\n  return minElem\n}\n\n/**\n * Returns the first element yielding the smallest value of the given function or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.minBy\n *\npublic inline fun <R : Comparable<R>>
LongArray.minBy(selector: (Long) -> R): Long? {\n  if (isEmpty()) return null\n  var minElem = this[0]\n  val lastIndex = this.lastIndex\n  if (lastIndex == 0) return minElem\n  var minValue = selector(minElem)\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (minValue > v) {\n      minElem = e\n      minValue = v\n    }\n  }\n  return minElem\n}\n\n/**\n * Returns the first element yielding the smallest value of the given function or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.minBy\n *\npublic inline fun <R : Comparable<R>>
FloatArray.minBy(selector: (Float) -> R): Float? {\n  if (isEmpty()) return null\n  var minElem = this[0]\n  val lastIndex = this.lastIndex\n  if (lastIndex == 0) return minElem\n  var minValue = selector(minElem)\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (minValue > v) {\n      minElem = e\n      minValue = v\n    }\n  }\n  return minElem\n}\n\n/**\n * Returns the first element yielding the smallest value of the given function or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.minBy\n *\npublic inline fun <R : Comparable<R>>
DoubleArray.minBy(selector: (Double) -> R): Double? {\n  if (isEmpty()) return null\n  var minElem = this[0]\n  val lastIndex = this.lastIndex\n  if (lastIndex == 0) return minElem\n  var minValue = selector(minElem)\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (minValue > v) {\n      minElem = e\n      minValue = v\n    }\n  }\n  return minElem\n}\n\n/**\n * Returns the first element yielding the smallest value of the given function or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.minBy\n *\npublic inline fun <R : Comparable<R>>
BooleanArray.minBy(selector: (Boolean) -> R): Boolean? {\n  if (isEmpty()) return null\n  var minElem = this[0]\n  val lastIndex = this.lastIndex\n  if (lastIndex == 0) return minElem\n  var minValue = selector(minElem)\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (minValue > v) {\n      minElem = e\n      minValue = v\n    }\n  }\n  return minElem\n}\n\n/**\n * Returns the first element yielding the smallest value of the given function or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.minBy\n *\npublic inline fun <R : Comparable<R>>
CharArray.minBy(selector: (Char) -> R): Char? {\n  if (isEmpty()) return null\n  var minElem = this[0]\n  val lastIndex = this.lastIndex\n  if (lastIndex == 0) return minElem\n  var minValue = selector(minElem)\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (minValue > v) {\n      minElem = e\n      minValue = v\n    }\n  }\n  return minElem\n}\n\n/**\n * Returns the first element having the smallest value according to the provided [comparator] or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.minBy\n *\npublic fun <T> Array<out T>.minWith(comparator: Comparator<in T>): T? {\n  if (isEmpty()) return null\n  var min = this[0]\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    if (comparator.compare(min, e) > 0) min = e\n  }\n  return min\n}\n\n/**\n * Returns the first element having the smallest value according to the provided [comparator] or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.minBy\n *\npublic fun ByteArray.minWith(comparator: Comparator<in Byte>): Byte? {\n  if (isEmpty()) return null\n  var min = this[0]\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    if (comparator.compare(min, e) > 0) min = e\n  }\n  return min\n}\n\n/**\n * Returns the first element having the smallest value according to the provided [comparator] or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.minBy\n *\npublic fun ShortArray.minWith(comparator: Comparator<in Short>): Short? {\n  if (isEmpty()) return null\n  var min = this[0]\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    if (comparator.compare(min, e) > 0) min = e\n  }\n  return min\n}\n\n/**\n * Returns the first element having the smallest value according to the provided [comparator] or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.minBy\n *\npublic fun IntArray.minWith(comparator: Comparator<in Int>): Int? {\n  if (isEmpty()) return null\n  var min = this[0]\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    if

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(comparator.compare(min, e) > 0) min = e\n } \n return min\n}\n\n/**\n * Returns the first element having the
smallest value according to the provided [comparator] or `null` if there are no elements.\n */\npublic fun
LongArray.minWith(comparator: Comparator<in Long>): Long? {\n if (isEmpty()) return null\n var min =
this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if (comparator.compare(min, e) > 0) min = e\n }\n
return min\n}\n\n/**\n * Returns the first element having the smallest value according to the provided [comparator]
or `null` if there are no elements.\n */\npublic fun FloatArray.minWith(comparator: Comparator<in Float>): Float?
{\n if (isEmpty()) return null\n var min = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if
(comparator.compare(min, e) > 0) min = e\n }\n return min\n}\n\n/**\n * Returns the first element having the
smallest value according to the provided [comparator] or `null` if there are no elements.\n */\npublic fun
DoubleArray.minWith(comparator: Comparator<in Double>): Double? {\n if (isEmpty()) return null\n var min =
this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if (comparator.compare(min, e) > 0) min = e\n }\n
return min\n}\n\n/**\n * Returns the first element having the smallest value according to the provided [comparator]
or `null` if there are no elements.\n */\npublic fun BooleanArray.minWith(comparator: Comparator<in Boolean>):
Boolean? {\n if (isEmpty()) return null\n var min = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n
if (comparator.compare(min, e) > 0) min = e\n }\n return min\n}\n\n/**\n * Returns the first element having the
smallest value according to the provided [comparator] or `null` if there are no elements.\n */\npublic fun
CharArray.minWith(comparator: Comparator<in Char>): Char? {\n if (isEmpty()) return null\n var min =
this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if (comparator.compare(min, e) > 0) min = e\n }\n
return min\n}\n\n/**\n * Returns `true` if the array has no elements.\n */\n * @sample
samples.collections.Collections.Aggregates.none\n */\npublic fun <T> Array<out T>.none(): Boolean {\n return
isEmpty()\n}\n\n/**\n * Returns `true` if the array has no elements.\n */\n * @sample
samples.collections.Collections.Aggregates.none\n */\npublic fun ByteArray.none(): Boolean {\n return
isEmpty()\n}\n\n/**\n * Returns `true` if the array has no elements.\n */\n * @sample
samples.collections.Collections.Aggregates.none\n */\npublic fun ShortArray.none(): Boolean {\n return
isEmpty()\n}\n\n/**\n * Returns `true` if the array has no elements.\n */\n * @sample
samples.collections.Collections.Aggregates.none\n */\npublic fun IntArray.none(): Boolean {\n return
isEmpty()\n}\n\n/**\n * Returns `true` if the array has no elements.\n */\n * @sample
samples.collections.Collections.Aggregates.none\n */\npublic fun LongArray.none(): Boolean {\n return
isEmpty()\n}\n\n/**\n * Returns `true` if the array has no elements.\n */\n * @sample
samples.collections.Collections.Aggregates.none\n */\npublic fun FloatArray.none(): Boolean {\n return
isEmpty()\n}\n\n/**\n * Returns `true` if the array has no elements.\n */\n * @sample
samples.collections.Collections.Aggregates.none\n */\npublic fun DoubleArray.none(): Boolean {\n return
isEmpty()\n}\n\n/**\n * Returns `true` if the array has no elements.\n */\n * @sample
samples.collections.Collections.Aggregates.none\n */\npublic fun BooleanArray.none(): Boolean {\n return
isEmpty()\n}\n\n/**\n * Returns `true` if the array has no elements.\n */\n * @sample
samples.collections.Collections.Aggregates.none\n */\npublic fun CharArray.none(): Boolean {\n return
isEmpty()\n}\n\n/**\n * Returns `true` if no elements match the given [predicate].\n */\n * @sample
samples.collections.Collections.Aggregates.noneWithPredicate\n */\npublic inline fun <T> Array<out
T>.none(predicate: (T) -> Boolean): Boolean {\n for (element in this) if (predicate(element)) return false\n return
true\n}\n\n/**\n * Returns `true` if no elements match the given [predicate].\n */\n * @sample
samples.collections.Collections.Aggregates.noneWithPredicate\n */\npublic inline fun ByteArray.none(predicate:
(Byte) -> Boolean): Boolean {\n for (element in this) if (predicate(element)) return false\n return
true\n}\n\n/**\n * Returns `true` if no elements match the given [predicate].\n */\n * @sample
samples.collections.Collections.Aggregates.noneWithPredicate\n */\npublic inline fun ShortArray.none(predicate:
(Short) -> Boolean): Boolean {\n for (element in this) if (predicate(element)) return false\n return
true\n}\n\n/**\n * Returns `true` if no elements match the given [predicate].\n */\n * @sample
samples.collections.Collections.Aggregates.noneWithPredicate\n */\npublic inline fun IntArray.none(predicate: (Int)
-> Boolean): Boolean {\n for (element in this) if (predicate(element)) return false\n return true\n}\n\n/**\n *

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Returns `true` if no elements match the given [predicate].\n \* \n \* @sample  
samples.collections.Collections.Aggregates.noneWithPredicate\n \* \n public inline fun LongArray.none(predicate:  
(Long) -> Boolean): Boolean {\n for (element in this) if (predicate(element)) return false\n return  
true\n}\n\n/\*\*\n \* Returns `true` if no elements match the given [predicate].\n \* \n \* @sample  
samples.collections.Collections.Aggregates.noneWithPredicate\n \* \n public inline fun FloatArray.none(predicate:  
(Float) -> Boolean): Boolean {\n for (element in this) if (predicate(element)) return false\n return  
true\n}\n\n/\*\*\n \* Returns `true` if no elements match the given [predicate].\n \* \n \* @sample  
samples.collections.Collections.Aggregates.noneWithPredicate\n \* \n public inline fun DoubleArray.none(predicate:  
(Double) -> Boolean): Boolean {\n for (element in this) if (predicate(element)) return false\n return  
true\n}\n\n/\*\*\n \* Returns `true` if no elements match the given [predicate].\n \* \n \* @sample  
samples.collections.Collections.Aggregates.noneWithPredicate\n \* \n public inline fun  
BooleanArray.none(predicate: (Boolean) -> Boolean): Boolean {\n for (element in this) if (predicate(element))  
return false\n return true\n}\n\n/\*\*\n \* Returns `true` if no elements match the given [predicate].\n \* \n \* @sample  
samples.collections.Collections.Aggregates.noneWithPredicate\n \* \n public inline fun CharArray.none(predicate:  
(Char) -> Boolean): Boolean {\n for (element in this) if (predicate(element)) return false\n return  
true\n}\n\n/\*\*\n \* Accumulates value starting with the first element and applying [operation] from left to right to  
current accumulator value and each element.\n \* \n \* @sample samples.collections.Collections.Aggregates.reduce\n \* \n public inline fun <S, T : S> Array<out T>.reduce(operation: (acc: S, T) -> S): S {\n if (isEmpty())\n throw  
UnsupportedOperationException("Empty array can't be reduced.")\n var accumulator: S = this[0]\n for (index  
in 1..lastIndex) {\n accumulator = operation(accumulator, this[index])\n }\n return accumulator\n}\n\n/\*\*\n \* Accumulates value starting with the first element and applying [operation] from left to right to current accumulator  
value and each element.\n \* \n \* @sample samples.collections.Collections.Aggregates.reduce\n \* \n public inline fun  
ByteArray.reduce(operation: (acc: Byte, Byte) -> Byte): Byte {\n if (isEmpty())\n throw  
UnsupportedOperationException("Empty array can't be reduced.")\n var accumulator = this[0]\n for (index in  
1..lastIndex) {\n accumulator = operation(accumulator, this[index])\n }\n return accumulator\n}\n\n/\*\*\n \* Accumulates value starting with the first element and applying [operation] from left to right to current accumulator  
value and each element.\n \* \n \* @sample samples.collections.Collections.Aggregates.reduce\n \* \n public inline fun  
ShortArray.reduce(operation: (acc: Short, Short) -> Short): Short {\n if (isEmpty())\n throw  
UnsupportedOperationException("Empty array can't be reduced.")\n var accumulator = this[0]\n for (index in  
1..lastIndex) {\n accumulator = operation(accumulator, this[index])\n }\n return accumulator\n}\n\n/\*\*\n \* Accumulates value starting with the first element and applying [operation] from left to right to current accumulator  
value and each element.\n \* \n \* @sample samples.collections.Collections.Aggregates.reduce\n \* \n public inline fun  
IntArray.reduce(operation: (acc: Int, Int) -> Int): Int {\n if (isEmpty())\n throw  
UnsupportedOperationException("Empty array can't be reduced.")\n var accumulator = this[0]\n for (index in  
1..lastIndex) {\n accumulator = operation(accumulator, this[index])\n }\n return accumulator\n}\n\n/\*\*\n \* Accumulates value starting with the first element and applying [operation] from left to right to current accumulator  
value and each element.\n \* \n \* @sample samples.collections.Collections.Aggregates.reduce\n \* \n public inline fun  
LongArray.reduce(operation: (acc: Long, Long) -> Long): Long {\n if (isEmpty())\n throw  
UnsupportedOperationException("Empty array can't be reduced.")\n var accumulator = this[0]\n for (index in  
1..lastIndex) {\n accumulator = operation(accumulator, this[index])\n }\n return accumulator\n}\n\n/\*\*\n \* Accumulates value starting with the first element and applying [operation] from left to right to current accumulator  
value and each element.\n \* \n \* @sample samples.collections.Collections.Aggregates.reduce\n \* \n public inline fun  
FloatArray.reduce(operation: (acc: Float, Float) -> Float): Float {\n if (isEmpty())\n throw  
UnsupportedOperationException("Empty array can't be reduced.")\n var accumulator = this[0]\n for (index in  
1..lastIndex) {\n accumulator = operation(accumulator, this[index])\n }\n return accumulator\n}\n\n/\*\*\n \* Accumulates value starting with the first element and applying [operation] from left to right to current accumulator  
value and each element.\n \* \n \* @sample samples.collections.Collections.Aggregates.reduce\n \* \n public inline fun  
DoubleArray.reduce(operation: (acc: Double, Double) -> Double): Double {\n if (isEmpty())\n throw



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UnsupportedOperationException("Empty array can't be reduced.")\n  var accumulator = this[0]\n  for (index in
1..lastIndex) {\n    accumulator = operation(accumulator, this[index])\n  }\n  return accumulator\n}\n\n/**\n *
Accumulates value starting with the first element and applying [operation] from left to right to current accumulator
value and each element.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun
BooleanArray.reduce(operation: (acc: Boolean, Boolean) -> Boolean): Boolean {\n  if (isEmpty())\n    throw
UnsupportedOperationException("Empty array can't be reduced.")\n  var accumulator = this[0]\n  for (index in
1..lastIndex) {\n    accumulator = operation(accumulator, this[index])\n  }\n  return accumulator\n}\n\n/**\n *
Accumulates value starting with the first element and applying [operation] from left to right to current
accumulator value and each element.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun
CharArray.reduce(operation: (acc: Char, Char) -> Char): Char {\n  if (isEmpty())\n    throw
UnsupportedOperationException("Empty array can't be reduced.")\n  var accumulator = this[0]\n  for (index in
1..lastIndex) {\n    accumulator = operation(accumulator, this[index])\n  }\n  return accumulator\n}\n\n/**\n *
Accumulates value starting with the first element and applying [operation] from left to right\n * to current
accumulator value and each element with its index in the original array.\n * @param [operation] function that takes
the index of an element, current accumulator value\n * and the element itself and calculates the next accumulator
value.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun <S, T : S>
Array<out T>.reduceIndexed(operation: (index: Int, acc: S, T) -> S): S {\n  if (isEmpty())\n    throw
UnsupportedOperationException("Empty array can't be reduced.")\n  var accumulator: S = this[0]\n  for (index
in 1..lastIndex) {\n    accumulator = operation(index, accumulator, this[index])\n  }\n  return
accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to
right\n * to current accumulator value and each element with its index in the original array.\n * @param [operation]
function that takes the index of an element, current accumulator value\n * and the element itself and calculates the
next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun
ByteArray.reduceIndexed(operation: (index: Int, acc: Byte, Byte) -> Byte): Byte {\n  if (isEmpty())\n    throw
UnsupportedOperationException("Empty array can't be reduced.")\n  var accumulator = this[0]\n  for (index in
1..lastIndex) {\n    accumulator = operation(index, accumulator, this[index])\n  }\n  return
accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to
right\n * to current accumulator value and each element with its index in the original array.\n * @param [operation]
function that takes the index of an element, current accumulator value\n * and the element itself and calculates the
next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun
ShortArray.reduceIndexed(operation: (index: Int, acc: Short, Short) -> Short): Short {\n  if (isEmpty())\n    throw
UnsupportedOperationException("Empty array can't be reduced.")\n  var accumulator = this[0]\n  for (index in
1..lastIndex) {\n    accumulator = operation(index, accumulator, this[index])\n  }\n  return
accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to
right\n * to current accumulator value and each element with its index in the original array.\n * @param [operation]
function that takes the index of an element, current accumulator value\n * and the element itself and calculates the
next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun
IntArray.reduceIndexed(operation: (index: Int, acc: Int, Int) -> Int): Int {\n  if (isEmpty())\n    throw
UnsupportedOperationException("Empty array can't be reduced.")\n  var accumulator = this[0]\n  for (index in
1..lastIndex) {\n    accumulator = operation(index, accumulator, this[index])\n  }\n  return
accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to
right\n * to current accumulator value and each element with its index in the original array.\n * @param [operation]
function that takes the index of an element, current accumulator value\n * and the element itself and calculates the
next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun
LongArray.reduceIndexed(operation: (index: Int, acc: Long, Long) -> Long): Long {\n  if (isEmpty())\n    throw
UnsupportedOperationException("Empty array can't be reduced.")\n  var accumulator = this[0]\n  for (index in
1..lastIndex) {\n    accumulator = operation(index, accumulator, this[index])\n  }\n  return
accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to

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right\n * to current accumulator value and each element with its index in the original array.\n * @param [operation]
function that takes the index of an element, current accumulator value\n * and the element itself and calculates the
next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun
FloatArray.reduceIndexed(operation: (index: Int, acc: Float, Float) -> Float): Float {\n if (isEmpty())\n throw
UnsupportedOperationException("Empty array can't be reduced.")\n var accumulator = this[0]\n for (index in
1..lastIndex) {\n accumulator = operation(index, accumulator, this[index])\n }\n return
accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to
right\n * to current accumulator value and each element with its index in the original array.\n * @param [operation]
function that takes the index of an element, current accumulator value\n * and the element itself and calculates the
next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun
DoubleArray.reduceIndexed(operation: (index: Int, acc: Double, Double) -> Double): Double {\n if (isEmpty())\n
throw UnsupportedOperationException("Empty array can't be reduced.")\n var accumulator = this[0]\n for
(index in 1..lastIndex) {\n accumulator = operation(index, accumulator, this[index])\n }\n return
accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to
right\n * to current accumulator value and each element with its index in the original array.\n * @param [operation]
function that takes the index of an element, current accumulator value\n * and the element itself and calculates the
next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun
BooleanArray.reduceIndexed(operation: (index: Int, acc: Boolean, Boolean) -> Boolean): Boolean {\n if
(isEmpty())\n throw UnsupportedOperationException("Empty array can't be reduced.")\n var accumulator =
this[0]\n for (index in 1..lastIndex) {\n accumulator = operation(index, accumulator, this[index])\n }\n
return accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from
left to right\n * to current accumulator value and each element with its index in the original array.\n * @param
[operation] function that takes the index of an element, current accumulator value\n * and the element itself and
calculates the next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n
*/\npublic inline fun CharArray.reduceIndexed(operation: (index: Int, acc: Char, Char) -> Char): Char {\n if
(isEmpty())\n throw UnsupportedOperationException("Empty array can't be reduced.")\n var accumulator =
this[0]\n for (index in 1..lastIndex) {\n accumulator = operation(index, accumulator, this[index])\n }\n
return accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from
left to right to current accumulator value and each element. Returns null if the array is empty.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceOrNull\n
*/\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun <S, T : S> Array<out
T>.reduceOrNull(operation: (acc: S, T) -> S): S? {\n if (isEmpty())\n return null\n var accumulator: S =
this[0]\n for (index in 1..lastIndex) {\n accumulator = operation(accumulator, this[index])\n }\n return
accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to
right to current accumulator value and each element. Returns null if the array is empty.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceOrNull\n
*/\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun ByteArray.reduceOrNull(operation: (acc:
Byte, Byte) -> Byte): Byte? {\n if (isEmpty())\n return null\n var accumulator = this[0]\n for (index in
1..lastIndex) {\n accumulator = operation(accumulator, this[index])\n }\n return accumulator\n}\n\n/**\n *
Accumulates value starting with the first element and applying [operation] from left to right to current accumulator
value and each element. Returns null if the array is empty.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceOrNull\n
*/\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun ShortArray.reduceOrNull(operation: (acc:
Short, Short) -> Short): Short? {\n if (isEmpty())\n return null\n var accumulator = this[0]\n for (index in
1..lastIndex) {\n accumulator = operation(accumulator, this[index])\n }\n return accumulator\n}\n\n/**\n *
Accumulates value starting with the first element and applying [operation] from left to right to current accumulator
value and each element. Returns null if the array is empty.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceOrNull\n

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*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun IntArray.reduceOrNull(operation: (acc: Int, Int) -> Int): Int? {\n    if (isEmpty())\n        return null\n    var accumulator = this[0]\n    for (index in 1..lastIndex)\n        accumulator = operation(accumulator, this[index])\n    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to right to current accumulator value and each element. Returns null if the array is empty.\n * \n * @sample\n samples.collections.Collections.Aggregates.reduceOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun LongArray.reduceOrNull(operation: (acc: Long, Long) -> Long): Long? {\n    if (isEmpty())\n        return null\n    var accumulator = this[0]\n    for (index in 1..lastIndex)\n        accumulator = operation(accumulator, this[index])\n    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to right to current accumulator value and each element. Returns null if the array is empty.\n * \n * @sample\n samples.collections.Collections.Aggregates.reduceOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun FloatArray.reduceOrNull(operation: (acc: Float, Float) -> Float): Float? {\n    if (isEmpty())\n        return null\n    var accumulator = this[0]\n    for (index in 1..lastIndex)\n        accumulator = operation(accumulator, this[index])\n    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to right to current accumulator value and each element. Returns null if the array is empty.\n * \n * @sample\n samples.collections.Collections.Aggregates.reduceOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun DoubleArray.reduceOrNull(operation: (acc: Double, Double) -> Double): Double? {\n    if (isEmpty())\n        return null\n    var accumulator = this[0]\n    for (index in 1..lastIndex)\n        accumulator = operation(accumulator, this[index])\n    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to right to current accumulator value and each element. Returns null if the array is empty.\n * \n * @sample\n samples.collections.Collections.Aggregates.reduceOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun BooleanArray.reduceOrNull(operation: (acc: Boolean, Boolean) -> Boolean): Boolean? {\n    if (isEmpty())\n        return null\n    var accumulator = this[0]\n    for (index in 1..lastIndex)\n        accumulator = operation(accumulator, this[index])\n    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to right to current accumulator value and each element. Returns null if the array is empty.\n * \n * @sample\n samples.collections.Collections.Aggregates.reduceOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun CharArray.reduceOrNull(operation: (acc: Char, Char) -> Char): Char? {\n    if (isEmpty())\n        return null\n    var accumulator = this[0]\n    for (index in 1..lastIndex)\n        accumulator = operation(accumulator, this[index])\n    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting with last element and applying [operation] from right to left to each element and current accumulator value.\n * \n * @sample\n samples.collections.Collections.Aggregates.reduceRight\n
*\npublic inline fun <S, T : S> Array<out T>.reduceRight(operation: (T, acc: S) -> S): S {\n    var index = lastIndex\n    if (index < 0) throw UnsupportedOperationException("Empty array can't be reduced.")\n    var accumulator: S = get(index--)\n    while (index >= 0) {\n        accumulator = operation(get(index--), accumulator)\n    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting with last element and applying [operation] from right to left to each element and current accumulator value.\n * \n * @sample\n samples.collections.Collections.Aggregates.reduceRight\n
*\npublic inline fun ByteArray.reduceRight(operation: (Byte, acc: Byte) -> Byte): Byte {\n    var index = lastIndex\n    if (index < 0) throw UnsupportedOperationException("Empty array can't be reduced.")\n    var accumulator = get(index--)\n    while (index >= 0) {\n        accumulator = operation(get(index--), accumulator)\n    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting with last element and applying [operation] from right to left to each element and current accumulator value.\n * \n * @sample\n samples.collections.Collections.Aggregates.reduceRight\n
*\npublic inline fun ShortArray.reduceRight(operation: (Short, acc: Short) -> Short): Short {\n    var index = lastIndex\n    if (index < 0) throw UnsupportedOperationException("Empty array can't be reduced.")\n    var accumulator = get(index--)\n}

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while (index >= 0) {
    accumulator = operation(get(index--), accumulator)
}
return accumulator
}
}

```

Accumulates value starting with last element and applying [operation] from right to left to each element and current accumulator value.
   
 @sample
   
 samples.collections.Collections.Aggregates.reduceRight
   
 public inline fun IntArray.reduceRight(operation: (Int, acc: Int) -> Int): Int {
 var index = lastIndex
 if (index < 0) throw
 UnsupportedOperationException("Empty array can't be reduced.")
 var accumulator = get(index--)
 while (index >= 0) {
 accumulator = operation(get(index--), accumulator)
 }
 return accumulator
 }
}

Accumulates value starting with last element and applying [operation] from right to left to each element and current accumulator value.
   
 @sample
   
 samples.collections.Collections.Aggregates.reduceRight
   
 public inline fun LongArray.reduceRight(operation: (Long, acc: Long) -> Long): Long {
 var index = lastIndex
 if (index < 0) throw
 UnsupportedOperationException("Empty array can't be reduced.")
 var accumulator = get(index--)
 while (index >= 0) {
 accumulator = operation(get(index--), accumulator)
 }
 return accumulator
 }
}

Accumulates value starting with last element and applying [operation] from right to left to each element and current accumulator value.
   
 @sample
   
 samples.collections.Collections.Aggregates.reduceRight
   
 public inline fun FloatArray.reduceRight(operation: (Float, acc: Float) -> Float): Float {
 var index = lastIndex
 if (index < 0) throw
 UnsupportedOperationException("Empty array can't be reduced.")
 var accumulator = get(index--)
 while (index >= 0) {
 accumulator = operation(get(index--), accumulator)
 }
 return accumulator
 }
}

Accumulates value starting with last element and applying [operation] from right to left to each element and current accumulator value.
   
 @sample
   
 samples.collections.Collections.Aggregates.reduceRight
   
 public inline fun DoubleArray.reduceRight(operation: (Double, acc: Double) -> Double): Double {
 var index = lastIndex
 if (index < 0) throw
 UnsupportedOperationException("Empty array can't be reduced.")
 var accumulator = get(index--)
 while (index >= 0) {
 accumulator = operation(get(index--), accumulator)
 }
 return accumulator
 }
}

Accumulates value starting with last element and applying [operation] from right to left to each element and current accumulator value.
   
 @sample
   
 samples.collections.Collections.Aggregates.reduceRight
   
 public inline fun BooleanArray.reduceRight(operation: (Boolean, acc: Boolean) -> Boolean): Boolean {
 var index = lastIndex
 if (index < 0) throw
 UnsupportedOperationException("Empty array can't be reduced.")
 var accumulator = get(index--)
 while (index >= 0) {
 accumulator = operation(get(index--), accumulator)
 }
 return accumulator
 }
}

Accumulates value starting with last element and applying [operation] from right to left to each element and current accumulator value.
   
 @sample
   
 samples.collections.Collections.Aggregates.reduceRight
   
 public inline fun CharArray.reduceRight(operation: (Char, acc: Char) -> Char): Char {
 var index = lastIndex
 if (index < 0) throw
 UnsupportedOperationException("Empty array can't be reduced.")
 var accumulator = get(index--)
 while (index >= 0) {
 accumulator = operation(get(index--), accumulator)
 }
 return accumulator
 }
}

Accumulates value starting with last element and applying [operation] from right to left to each element with its index in the original array and current accumulator value.
   
 @param [operation] function that takes the index of an element, the element itself and current accumulator value, and calculates the next accumulator value.
   
 @sample
   
 samples.collections.Collections.Aggregates.reduceRight
   
 public inline fun <S, T : S> Array<out T>.reduceRightIndexed(operation: (index: Int, T, acc: S) -> S): S {
 var index = lastIndex
 if (index < 0) throw
 UnsupportedOperationException("Empty array can't be reduced.")
 var accumulator: S = get(index--)
 while (index >= 0) {
 accumulator = operation(index, get(index), accumulator)
 --index
 }
 return accumulator
 }
}

Accumulates value starting with last element and applying [operation] from right to left to each element with its index in the original array and current accumulator value.
   
 @param [operation] function that takes the index of an element, the element itself and current accumulator value, and calculates the next accumulator value.
   
 @sample
   
 samples.collections.Collections.Aggregates.reduceRight
   
 public inline fun ByteArray.reduceRightIndexed(operation: (index: Int, Byte, acc: Byte) -> Byte): Byte {
 var index = lastIndex
 if (index < 0) throw
 UnsupportedOperationException("Empty array can't be reduced.")
 var

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accumulator = get(index--)\n  while (index >= 0) {\n    accumulator = operation(index, get(index),
accumulator)\n    --index\n  }\n  return accumulator\n}\n\n/**\n * Accumulates value starting with last element
and applying [operation] from right to left\n * to each element with its index in the original array and current
accumulator value.\n * @param [operation] function that takes the index of an element, the element itself\n * and
current accumulator value, and calculates the next accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRight\n */\npublic inline fun
ShortArray.reduceRightIndexed(operation: (index: Int, Short, acc: Short) -> Short): Short {\n  var index =
lastIndex\n  if (index < 0) throw UnsupportedOperationException("Empty array can't be reduced.")\n  var
accumulator = get(index--)\n  while (index >= 0) {\n    accumulator = operation(index, get(index),
accumulator)\n    --index\n  }\n  return accumulator\n}\n\n/**\n * Accumulates value starting with last element
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accumulator value.\n * @param [operation] function that takes the index of an element, the element itself\n * and
current accumulator value, and calculates the next accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRight\n */\npublic inline fun
IntArray.reduceRightIndexed(operation: (index: Int, Int, acc: Int) -> Int): Int {\n  var index = lastIndex\n  if (index
< 0) throw UnsupportedOperationException("Empty array can't be reduced.")\n  var accumulator = get(index--)\n
while (index >= 0) {\n    accumulator = operation(index, get(index), accumulator)\n    --index\n  }\n  return
accumulator\n}\n\n/**\n * Accumulates value starting with last element and applying [operation] from right to left\n
* to each element with its index in the original array and current accumulator value.\n * @param [operation]
function that takes the index of an element, the element itself\n * and current accumulator value, and calculates the
next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduceRight\n */\npublic
inline fun LongArray.reduceRightIndexed(operation: (index: Int, Long, acc: Long) -> Long): Long {\n  var index =
lastIndex\n  if (index < 0) throw UnsupportedOperationException("Empty array can't be reduced.")\n  var
accumulator = get(index--)\n  while (index >= 0) {\n    accumulator = operation(index, get(index),
accumulator)\n    --index\n  }\n  return accumulator\n}\n\n/**\n * Accumulates value starting with last element
and applying [operation] from right to left\n * to each element with its index in the original array and current
accumulator value.\n * @param [operation] function that takes the index of an element, the element itself\n * and
current accumulator value, and calculates the next accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRight\n */\npublic inline fun
FloatArray.reduceRightIndexed(operation: (index: Int, Float, acc: Float) -> Float): Float {\n  var index =
lastIndex\n  if (index < 0) throw UnsupportedOperationException("Empty array can't be reduced.")\n  var
accumulator = get(index--)\n  while (index >= 0) {\n    accumulator = operation(index, get(index),
accumulator)\n    --index\n  }\n  return accumulator\n}\n\n/**\n * Accumulates value starting with last element
and applying [operation] from right to left\n * to each element with its index in the original array and current
accumulator value.\n * @param [operation] function that takes the index of an element, the element itself\n * and
current accumulator value, and calculates the next accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRight\n */\npublic inline fun
DoubleArray.reduceRightIndexed(operation: (index: Int, Double, acc: Double) -> Double): Double {\n  var index =
lastIndex\n  if (index < 0) throw UnsupportedOperationException("Empty array can't be reduced.")\n  var
accumulator = get(index--)\n  while (index >= 0) {\n    accumulator = operation(index, get(index),
accumulator)\n    --index\n  }\n  return accumulator\n}\n\n/**\n * Accumulates value starting with last element
and applying [operation] from right to left\n * to each element with its index in the original array and current
accumulator value.\n * @param [operation] function that takes the index of an element, the element itself\n * and
current accumulator value, and calculates the next accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRight\n */\npublic inline fun
BooleanArray.reduceRightIndexed(operation: (index: Int, Boolean, acc: Boolean) -> Boolean): Boolean {\n  var
index = lastIndex\n  if (index < 0) throw UnsupportedOperationException("Empty array can't be reduced.")\n
var accumulator = get(index--)\n  while (index >= 0) {\n    accumulator = operation(index, get(index),

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accumulator)\n    --index\n })\n return accumulator\n}\n\n/**\n * Accumulates value starting with last element
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accumulator value.\n * @param [operation] function that takes the index of an element, the element itself\n * and
current accumulator value, and calculates the next accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRight\n *\npublic inline fun
CharArray.reduceRightIndexed(operation: (index: Int, Char, acc: Char) -> Char): Char {\n    var index = lastIndex\n
if (index < 0) throw UnsupportedOperationException("\nEmpty array can't be reduced.\n")\n    var accumulator =
get(index--)\n    while (index >= 0) {\n        accumulator = operation(index, get(index), accumulator)\n        --index\n
    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting with last element and applying [operation] from
right to left to each element and current accumulator value. Returns null if the array is empty.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRightOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun <S, T : S> Array<out
T>.reduceRightOrNull(operation: (T, acc: S) -> S): S? {\n    var index = lastIndex\n    if (index < 0) return null\n
var accumulator: S = get(index--)\n    while (index >= 0) {\n        accumulator = operation(get(index--),
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accumulator\n}\n\n/**\n * Accumulates value starting with last element and applying [operation] from right to left
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(Int, acc: Int) -> Int): Int? {\n    var index = lastIndex\n    if (index < 0) return null\n    var accumulator =
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(Long, acc: Long) -> Long): Long? {\n    var index = lastIndex\n    if (index < 0) return null\n    var accumulator =
get(index--)\n    while (index >= 0) {\n        accumulator = operation(get(index--), accumulator)\n    }\n    return
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samples.collections.Collections.Aggregates.reduceRightOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun FloatArray.reduceRightOrNull(operation:
(Float, acc: Float) -> Float): Float? {\n    var index = lastIndex\n    if (index < 0) return null\n    var accumulator =
get(index--)\n    while (index >= 0) {\n        accumulator = operation(get(index--), accumulator)\n    }\n    return
accumulator\n}\n\n/**\n * Accumulates value starting with last element and applying [operation] from right to left
to each element and current accumulator value. Returns null if the array is empty.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRightOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun DoubleArray.reduceRightOrNull(operation:

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(Double, acc: Double) -> Double): Double? {\n  var index = lastIndex\n  if (index < 0) return null\n  var
accumulator = get(index--)\n  while (index >= 0) {\n    accumulator = operation(get(index--), accumulator)\n
}\n  return accumulator\n}\n\n/**\n * Accumulates value starting with last element and applying [operation] from
right to left to each element and current accumulator value. Returns null if the array is empty.\n * \n * @sample
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*/\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun
BooleanArray.reduceRightOrNull(operation: (Boolean, acc: Boolean) -> Boolean): Boolean? {\n  var index =
lastIndex\n  if (index < 0) return null\n  var accumulator = get(index--)\n  while (index >= 0) {\n
accumulator = operation(get(index--), accumulator)\n  }\n  return accumulator\n}\n\n/**\n * Accumulates value
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Returns null if the array is empty.\n * \n * @sample
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*/\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun CharArray.reduceRightOrNull(operation:
(Char, acc: Char) -> Char): Char? {\n  var index = lastIndex\n  if (index < 0) return null\n  var accumulator =
get(index--)\n  while (index >= 0) {\n    accumulator = operation(get(index--), accumulator)\n  }\n  return
accumulator\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying
[operation] from left to right\n * to each element and current accumulator value that starts with [initial] value.\n * \n
* Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would affect the
previous value in resulting list.\n * \n * @param [operation] function that takes current accumulator value and an
element, and calculates the next accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.scan\n
*/\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun <T, R> Array<out T>.scan(initial: R, operation: (acc: R, T) -> R): List<R> {\n  if (isEmpty()) return
listOf(initial)\n  val result = ArrayList<R>(size + 1).apply { add(initial) }\n  var accumulator = initial\n  for
(element in this) {\n    accumulator = operation(accumulator, element)\n    result.add(accumulator)\n  }\n  return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying
[operation] from left to right\n * to each element and current accumulator value that starts with [initial] value.\n * \n
* Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would affect the
previous value in resulting list.\n * \n * @param [operation] function that takes current accumulator value and an
element, and calculates the next accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.scan\n
*/\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <R>
ByteArray.scan(initial: R, operation: (acc: R, Byte) -> R): List<R> {\n  if (isEmpty()) return listOf(initial)\n  val
result = ArrayList<R>(size + 1).apply { add(initial) }\n  var accumulator = initial\n  for (element in this) {\n
accumulator = operation(accumulator, element)\n  result.add(accumulator)\n  }\n  return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying [operation] from left to right\n * to
each element and current accumulator value that starts with [initial] value.\n * \n * Note that `acc` value passed to
[operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n
* @param [operation] function that takes current accumulator value and an element, and calculates the next
accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scan\n
*/\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <R>
ShortArray.scan(initial: R, operation: (acc: R, Short) -> R): List<R> {\n  if (isEmpty()) return listOf(initial)\n  val
result = ArrayList<R>(size + 1).apply { add(initial) }\n  var accumulator = initial\n  for (element in this) {\n
accumulator = operation(accumulator, element)\n  result.add(accumulator)\n  }\n  return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying [operation] from left to right\n * to
each element and current accumulator value that starts with [initial] value.\n * \n * Note that `acc` value passed to
[operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n
* @param [operation] function that takes current accumulator value and an element, and calculates the next
accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scan\n

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*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <R>
IntArray.scan(initial: R, operation: (acc: R, Int) -> R): List<R> {\n  if (isEmpty()) return listOf(initial)\n  val
result = ArrayList<R>(size + 1).apply { add(initial) }\n  var accumulator = initial\n  for (element in this) {\n
accumulator = operation(accumulator, element)\n    result.add(accumulator)\n  }\n  return result\n}\n\n/**\n *
Returns a list containing successive accumulation values generated by applying [operation] from left to right\n *
to each element and current accumulator value that starts with [initial] value.\n * \n * Note that `acc` value passed to
[operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n *
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accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scan\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <R>
LongArray.scan(initial: R, operation: (acc: R, Long) -> R): List<R> {\n  if (isEmpty()) return listOf(initial)\n  val
result = ArrayList<R>(size + 1).apply { add(initial) }\n  var accumulator = initial\n  for (element in this) {\n
accumulator = operation(accumulator, element)\n    result.add(accumulator)\n  }\n  return result\n}\n\n/**\n *
Returns a list containing successive accumulation values generated by applying [operation] from left to right\n *
to each element and current accumulator value that starts with [initial] value.\n * \n * Note that `acc` value passed to
[operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n *
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accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scan\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <R>
FloatArray.scan(initial: R, operation: (acc: R, Float) -> R): List<R> {\n  if (isEmpty()) return listOf(initial)\n  val
result = ArrayList<R>(size + 1).apply { add(initial) }\n  var accumulator = initial\n  for (element in this) {\n
accumulator = operation(accumulator, element)\n    result.add(accumulator)\n  }\n  return result\n}\n\n/**\n *
Returns a list containing successive accumulation values generated by applying [operation] from left to right\n *
to each element and current accumulator value that starts with [initial] value.\n * \n * Note that `acc` value passed to
[operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n *
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accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scan\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <R>
DoubleArray.scan(initial: R, operation: (acc: R, Double) -> R): List<R> {\n  if (isEmpty()) return listOf(initial)\n
val result = ArrayList<R>(size + 1).apply { add(initial) }\n  var accumulator = initial\n  for (element in this) {\n
accumulator = operation(accumulator, element)\n    result.add(accumulator)\n  }\n  return result\n}\n\n/**\n *
Returns a list containing successive accumulation values generated by applying [operation] from left to right\n *
to each element and current accumulator value that starts with [initial] value.\n * \n * Note that `acc` value passed to
[operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n *
@param [operation] function that takes current accumulator value and an element, and calculates the next
accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scan\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <R>
BooleanArray.scan(initial: R, operation: (acc: R, Boolean) -> R): List<R> {\n  if (isEmpty()) return listOf(initial)\n
val result = ArrayList<R>(size + 1).apply { add(initial) }\n  var accumulator = initial\n  for (element in this) {\n
accumulator = operation(accumulator, element)\n    result.add(accumulator)\n  }\n  return result\n}\n\n/**\n *
Returns a list containing successive accumulation values generated by applying [operation] from left to right\n *
to each element and current accumulator value that starts with [initial] value.\n * \n * Note that `acc` value passed to
[operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n *
@param [operation] function that takes current accumulator value and an element, and calculates the next
accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scan\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <R>
CharArray.scan(initial: R, operation: (acc: R, Char) -> R): List<R> {\n  if (isEmpty()) return listOf(initial)\n  val
result = ArrayList<R>(size + 1).apply { add(initial) }\n  var accumulator = initial\n  for (element in this) {\n

```



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accumulator = operation(accumulator, element)\n    result.add(accumulator)\n } \n return result\n}\n\n/**\n *
Returns a list containing successive accumulation values generated by applying [operation] from left to right\n * to
each element, its index in the original array and current accumulator value that starts with [initial] value.\n * \n *
Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would affect the
previous value in resulting list.\n * \n * @param [operation] function that takes the index of an element, current
accumulator value\n * and the element itself, and calculates the next accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.scan\n * \n *\n */\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic
inline fun <T, R> Array<out T>.scanIndexed(initial: R, operation: (index: Int, acc: R, T) -> R): List<R> {\n if
(isEmpty()) return listOf(initial)\n val result = ArrayList<R>(size + 1).apply { add(initial) }\n var accumulator =
initial\n for (index in indices) {\n accumulator = operation(index, accumulator, this[index])\n
result.add(accumulator)\n } \n return result\n}\n\n/**\n * Returns a list containing successive accumulation
values generated by applying [operation] from left to right\n * to each element, its index in the original array and
current accumulator value that starts with [initial] value.\n * \n * Note that `acc` value passed to [operation]
function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n *
@param [operation] function that takes the index of an element, current accumulator value\n * and the element
itself, and calculates the next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scan\n
*\n *\n */\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <R>
ByteArray.scanIndexed(initial: R, operation: (index: Int, acc: R, Byte) -> R): List<R> {\n if (isEmpty()) return
listOf(initial)\n val result = ArrayList<R>(size + 1).apply { add(initial) }\n var accumulator = initial\n for
(index in indices) {\n accumulator = operation(index, accumulator, this[index])\n result.add(accumulator)\n
} \n return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying
[operation] from left to right\n * to each element, its index in the original array and current accumulator value that
starts with [initial] value.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n *
otherwise it would affect the previous value in resulting list.\n * \n * @param [operation] function that takes the
index of an element, current accumulator value\n * and the element itself, and calculates the next accumulator
value.\n * \n * @sample samples.collections.Collections.Aggregates.scan\n
*\n *\n */\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <R>
ShortArray.scanIndexed(initial: R, operation: (index: Int, acc: R, Short) -> R): List<R> {\n if (isEmpty()) return
listOf(initial)\n val result = ArrayList<R>(size + 1).apply { add(initial) }\n var accumulator = initial\n for
(index in indices) {\n accumulator = operation(index, accumulator, this[index])\n result.add(accumulator)\n
} \n return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying
[operation] from left to right\n * to each element, its index in the original array and current accumulator value that
starts with [initial] value.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n *
otherwise it would affect the previous value in resulting list.\n * \n * @param [operation] function that takes the
index of an element, current accumulator value\n * and the element itself, and calculates the next accumulator
value.\n * \n * @sample samples.collections.Collections.Aggregates.scan\n
*\n *\n */\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <R>
IntArray.scanIndexed(initial: R, operation: (index: Int, acc: R, Int) -> R): List<R> {\n if (isEmpty()) return
listOf(initial)\n val result = ArrayList<R>(size + 1).apply { add(initial) }\n var accumulator = initial\n for
(index in indices) {\n accumulator = operation(index, accumulator, this[index])\n result.add(accumulator)\n
} \n return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying
[operation] from left to right\n * to each element, its index in the original array and current accumulator value that
starts with [initial] value.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n *
otherwise it would affect the previous value in resulting list.\n * \n * @param [operation] function that takes the
index of an element, current accumulator value\n * and the element itself, and calculates the next accumulator
value.\n * \n * @sample samples.collections.Collections.Aggregates.scan\n
*\n *\n */\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <R>
LongArray.scanIndexed(initial: R, operation: (index: Int, acc: R, Long) -> R): List<R> {\n if (isEmpty()) return

```

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listOf(initial)\n  val result = ArrayList<R>(size + 1).apply { add(initial) }\n  var accumulator = initial\n  for
(index in indices) {\n    accumulator = operation(index, accumulator, this[index])\n    result.add(accumulator)\n  }\n  return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying
[operation] from left to right\n * to each element, its index in the original array and current accumulator value that
starts with [initial] value.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n * @param [operation] function that takes the
index of an element, current accumulator value\n * and the element itself, and calculates the next accumulator
value.\n * \n * @sample samples.collections.Collections.Aggregates.scan\n
*/\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <R>
FloatArray.scanIndexed(initial: R, operation: (index: Int, acc: R, Float) -> R): List<R> {\n  if (isEmpty()) return
listOf(initial)\n  val result = ArrayList<R>(size + 1).apply { add(initial) }\n  var accumulator = initial\n  for
(index in indices) {\n    accumulator = operation(index, accumulator, this[index])\n    result.add(accumulator)\n  }\n  return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying
[operation] from left to right\n * to each element, its index in the original array and current accumulator value that
starts with [initial] value.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n * @param [operation] function that takes the
index of an element, current accumulator value\n * and the element itself, and calculates the next accumulator
value.\n * \n * @sample samples.collections.Collections.Aggregates.scan\n
*/\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <R>
DoubleArray.scanIndexed(initial: R, operation: (index: Int, acc: R, Double) -> R): List<R> {\n  if (isEmpty())
return listOf(initial)\n  val result = ArrayList<R>(size + 1).apply { add(initial) }\n  var accumulator = initial\n
for (index in indices) {\n    accumulator = operation(index, accumulator, this[index])\n    result.add(accumulator)\n  }\n  return result\n}\n\n/**\n * Returns a list containing successive accumulation
values generated by applying [operation] from left to right\n * to each element, its index in the original array and
current accumulator value that starts with [initial] value.\n * \n * Note that `acc` value passed to [operation] function
should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n * @param [operation]
function that takes the index of an element, current accumulator value\n * and the element itself, and calculates the
next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scan\n
*/\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <R>
BooleanArray.scanIndexed(initial: R, operation: (index: Int, acc: R, Boolean) -> R): List<R> {\n  if (isEmpty())
return listOf(initial)\n  val result = ArrayList<R>(size + 1).apply { add(initial) }\n  var accumulator = initial\n
for (index in indices) {\n    accumulator = operation(index, accumulator, this[index])\n    result.add(accumulator)\n  }\n  return result\n}\n\n/**\n * Returns a list containing successive accumulation
values generated by applying [operation] from left to right\n * to each element, its index in the original array and
current accumulator value that starts with [initial] value.\n * \n * Note that `acc` value passed to [operation] function
should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n * @param [operation]
function that takes the index of an element, current accumulator value\n * and the element itself, and calculates the
next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scan\n
*/\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <R>
CharArray.scanIndexed(initial: R, operation: (index: Int, acc: R, Char) -> R): List<R> {\n  if (isEmpty()) return
listOf(initial)\n  val result = ArrayList<R>(size + 1).apply { add(initial) }\n  var accumulator = initial\n  for
(index in indices) {\n    accumulator = operation(index, accumulator, this[index])\n    result.add(accumulator)\n  }\n  return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying
[operation] from left to right\n * to each element and current accumulator value that starts with the first element of
this array.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would
affect the previous value in resulting list.\n * \n * @param [operation] function that takes current accumulator value
and the element, and calculates the next accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.scanReduce\n

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*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun <S, T : S> Array<out
T>.scanReduce(operation: (acc: S, T) -> S): List<S> {\n if (isEmpty()) return emptyList()\n var accumulator: S
= this[0]\n val result = ArrayList<S>(size).apply { add(accumulator) }\n for (index in 1 until size) {\n
accumulator = operation(accumulator, this[index])\n result.add(accumulator)\n }\n return result\n}\n\n/**\n
* Returns a list containing successive accumulation values generated by applying [operation] from left to right\n * to
each element and current accumulator value that starts with the first element of this array.\n * \n * @param
[operation] function that takes current accumulator value and an element, and calculates the next accumulator
value.\n * \n * @sample samples.collections.Collections.Aggregates.scanReduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
ByteArray.scanReduce(operation: (acc: Byte, Byte) -> Byte): List<Byte> {\n if (isEmpty()) return emptyList()\n
var accumulator = this[0]\n val result = ArrayList<Byte>(size).apply { add(accumulator) }\n for (index in 1 until
size) {\n accumulator = operation(accumulator, this[index])\n result.add(accumulator)\n }\n return
result\n}\n\n/**\n
* Returns a list containing successive accumulation values generated by applying [operation] from
left to right\n * to each element and current accumulator value that starts with the first element of this array.\n * \n *
@param [operation] function that takes current accumulator value and an element, and calculates the next
accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scanReduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
ShortArray.scanReduce(operation: (acc: Short, Short) -> Short): List<Short> {\n if (isEmpty()) return
emptyList()\n var accumulator = this[0]\n val result = ArrayList<Short>(size).apply { add(accumulator) }\n for
(index in 1 until size) {\n accumulator = operation(accumulator, this[index])\n result.add(accumulator)\n
}\n return result\n}\n\n/**\n
* Returns a list containing successive accumulation values generated by applying
[operation] from left to right\n * to each element and current accumulator value that starts with the first element of
this array.\n * \n * @param [operation] function that takes current accumulator value and an element, and calculates
the next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scanReduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
IntArray.scanReduce(operation: (acc: Int, Int) -> Int): List<Int> {\n if (isEmpty()) return
emptyList()\n var accumulator = this[0]\n val result = ArrayList<Int>(size).apply { add(accumulator) }\n for (index in 1 until size)
{\n accumulator = operation(accumulator, this[index])\n result.add(accumulator)\n }\n return
result\n}\n\n/**\n
* Returns a list containing successive accumulation values generated by applying [operation] from
left to right\n * to each element and current accumulator value that starts with the first element of this array.\n * \n *
@param [operation] function that takes current accumulator value and an element, and calculates the next
accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scanReduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
LongArray.scanReduce(operation: (acc: Long, Long) -> Long): List<Long> {\n if (isEmpty()) return
emptyList()\n var accumulator = this[0]\n val result = ArrayList<Long>(size).apply { add(accumulator) }\n for
(index in 1 until size) {\n accumulator = operation(accumulator, this[index])\n result.add(accumulator)\n
}\n return result\n}\n\n/**\n
* Returns a list containing successive accumulation values generated by applying
[operation] from left to right\n * to each element and current accumulator value that starts with the first element of
this array.\n * \n * @param [operation] function that takes current accumulator value and an element, and calculates
the next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scanReduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
FloatArray.scanReduce(operation: (acc: Float, Float) -> Float): List<Float> {\n if (isEmpty()) return
emptyList()\n var accumulator = this[0]\n val result = ArrayList<Float>(size).apply { add(accumulator) }\n for (index in 1
until size) {\n accumulator = operation(accumulator, this[index])\n result.add(accumulator)\n }\n return
result\n}\n\n/**\n
* Returns a list containing successive accumulation values generated by applying [operation] from
left to right\n * to each element and current accumulator value that starts with the first element of this array.\n * \n *
@param [operation] function that takes current accumulator value and an element, and calculates the next
accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scanReduce\n

```

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*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
DoubleArray.scanReduce(operation: (acc: Double, Double) -> Double): List<Double> {\n  if (isEmpty()) return
emptyList()\n  var accumulator = this[0]\n  val result = ArrayList<Double>(size).apply { add(accumulator) }\n
for (index in 1 until size) {\n    accumulator = operation(accumulator, this[index])\n    result.add(accumulator)\n
  }\n  return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying
[operation] from left to right\n * to each element and current accumulator value that starts with the first element of
this array.\n * \n * @param [operation] function that takes current accumulator value and an element, and calculates
the next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scanReduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
BooleanArray.scanReduce(operation: (acc: Boolean, Boolean) -> Boolean): List<Boolean> {\n  if (isEmpty())
return emptyList()\n  var accumulator = this[0]\n  val result = ArrayList<Boolean>(size).apply {
add(accumulator) }\n  for (index in 1 until size) {\n    accumulator = operation(accumulator, this[index])\n
result.add(accumulator)\n  }\n  return result\n}\n\n/**\n * Returns a list containing successive accumulation
values generated by applying [operation] from left to right\n * to each element and current accumulator value that
starts with the first element of this array.\n * \n * @param [operation] function that takes current accumulator value
and an element, and calculates the next accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.scanReduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
CharArray.scanReduce(operation: (acc: Char, Char) -> Char): List<Char> {\n  if (isEmpty()) return emptyList()\n
var accumulator = this[0]\n  val result = ArrayList<Char>(size).apply { add(accumulator) }\n  for (index in 1 until
size) {\n    accumulator = operation(accumulator, this[index])\n    result.add(accumulator)\n  }\n  return
result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying [operation] from
left to right\n * to each element, its index in the original array and current accumulator value that starts with the first
element of this array.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n *
otherwise it would affect the previous value in resulting list.\n * \n * @param [operation] function that takes the
index of an element, current accumulator value\n * and the element itself, and calculates the next accumulator
value.\n * \n * @sample samples.collections.Collections.Aggregates.scanReduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun <S, T : S> Array<out
T>.scanReduceIndexed(operation: (index: Int, acc: S, T) -> S): List<S> {\n  if (isEmpty()) return emptyList()\n
var accumulator: S = this[0]\n  val result = ArrayList<S>(size).apply { add(accumulator) }\n  for (index in 1 until
size) {\n    accumulator = operation(index, accumulator, this[index])\n    result.add(accumulator)\n  }\n  return
result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying
[operation] from left to right\n * to each element, its index in the original array and current accumulator value that
starts with the first element of this array.\n * \n * @param [operation] function that takes the index of an element,
current accumulator value\n * and the element itself, and calculates the next accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.scanReduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
ByteArray.scanReduceIndexed(operation: (index: Int, acc: Byte, Byte) -> Byte): List<Byte> {\n  if (isEmpty())
return emptyList()\n  var accumulator = this[0]\n  val result = ArrayList<Byte>(size).apply { add(accumulator)
}\n  for (index in 1 until size) {\n    accumulator = operation(index, accumulator, this[index])\n
result.add(accumulator)\n  }\n  return result\n}\n\n/**\n * Returns a list containing successive accumulation
values generated by applying [operation] from left to right\n * to each element, its index in the original array and
current accumulator value that starts with the first element of this array.\n * \n * @param [operation] function that
takes the index of an element, current accumulator value\n * and the element itself, and calculates the next
accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scanReduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
ShortArray.scanReduceIndexed(operation: (index: Int, acc: Short, Short) -> Short): List<Short> {\n  if (isEmpty())
return emptyList()\n  var accumulator = this[0]\n  val result = ArrayList<Short>(size).apply { add(accumulator)
}

```

```

}
for (index in 1 until size) {
    accumulator = operation(index, accumulator, this[index])
result.add(accumulator)
}
return result
}

```

**scanReduce** Returns a list containing successive accumulation values generated by applying [operation] from left to right to each element, its index in the original array and current accumulator value that starts with the first element of this array.

**@param** [operation] function that takes the index of an element, current accumulator value and the element itself, and calculates the next accumulator value.

**@sample** samples.collections.Collections.Aggregates.scanReduce

```

*
@SinceKotlin("1.3")
@ExperimentalStdlibApi
@kotlin.internal.InlineOnly
public inline fun
IntArray.scanReduceIndexed(operation: (index: Int, acc: Int, Int) -> Int): List<Int> {
    if (isEmpty()) return
emptyList()
    var accumulator = this[0]
    val result = ArrayList<Int>(size).apply { add(accumulator) }
    for (index in 1 until size) {
        accumulator = operation(index, accumulator, this[index])
result.add(accumulator)
    }
    return result
}

```

**scanReduceIndexed** Returns a list containing successive accumulation values generated by applying [operation] from left to right to each element, its index in the original array and current accumulator value that starts with the first element of this array.

**@param** [operation] function that takes the index of an element, current accumulator value and the element itself, and calculates the next accumulator value.

**@sample** samples.collections.Collections.Aggregates.scanReduce

```

*
@SinceKotlin("1.3")
@ExperimentalStdlibApi
@kotlin.internal.InlineOnly
public inline fun
LongArray.scanReduceIndexed(operation: (index: Int, acc: Long, Long) -> Long): List<Long> {
    if (isEmpty())
return emptyList()
    var accumulator = this[0]
    val result = ArrayList<Long>(size).apply { add(accumulator)
}
    for (index in 1 until size) {
        accumulator = operation(index, accumulator, this[index])
result.add(accumulator)
    }
    return result
}

```

**scanReduceIndexed** Returns a list containing successive accumulation values generated by applying [operation] from left to right to each element, its index in the original array and current accumulator value that starts with the first element of this array.

**@param** [operation] function that takes the index of an element, current accumulator value and the element itself, and calculates the next accumulator value.

**@sample** samples.collections.Collections.Aggregates.scanReduce

```

*
@SinceKotlin("1.3")
@ExperimentalStdlibApi
@kotlin.internal.InlineOnly
public inline fun
FloatArray.scanReduceIndexed(operation: (index: Int, acc: Float, Float) -> Float): List<Float> {
    if (isEmpty())
return emptyList()
    var accumulator = this[0]
    val result = ArrayList<Float>(size).apply { add(accumulator)
}
    for (index in 1 until size) {
        accumulator = operation(index, accumulator, this[index])
result.add(accumulator)
    }
    return result
}

```

**scanReduceIndexed** Returns a list containing successive accumulation values generated by applying [operation] from left to right to each element, its index in the original array and current accumulator value that starts with the first element of this array.

**@param** [operation] function that takes the index of an element, current accumulator value and the element itself, and calculates the next accumulator value.

**@sample** samples.collections.Collections.Aggregates.scanReduce

```

*
@SinceKotlin("1.3")
@ExperimentalStdlibApi
@kotlin.internal.InlineOnly
public inline fun
DoubleArray.scanReduceIndexed(operation: (index: Int, acc: Double, Double) -> Double): List<Double> {
    if (isEmpty()) return emptyList()
    var accumulator = this[0]
    val result = ArrayList<Double>(size).apply {
add(accumulator) }
    for (index in 1 until size) {
        accumulator = operation(index, accumulator, this[index])
result.add(accumulator)
    }
    return result
}

```

**scanReduceIndexed** Returns a list containing successive accumulation values generated by applying [operation] from left to right to each element, its index in the original array and current accumulator value that starts with the first element of this array.

**@param** [operation] function that takes the index of an element, current accumulator value and the element itself, and calculates the next accumulator value.

**@sample** samples.collections.Collections.Aggregates.scanReduce

```

*
@SinceKotlin("1.3")
@ExperimentalStdlibApi
@kotlin.internal.InlineOnly
public inline fun
BooleanArray.scanReduceIndexed(operation: (index: Int, acc: Boolean, Boolean) -> Boolean): List<Boolean> {
    if (isEmpty()) return emptyList()
    var accumulator = this[0]
    val result = ArrayList<Boolean>(size).apply {
add(accumulator) }
    for (index in 1 until size) {
        accumulator = operation(index, accumulator, this[index])
result.add(accumulator)
    }
    return result
}

```

**scanReduceIndexed** Returns a list containing successive accumulation values generated by applying [operation] from left to right to each element, its index in the original array and

current accumulator value that starts with the first element of this array.

`@param [operation] function that takes the index of an element, current accumulator value and the element itself, and calculates the next accumulator value.`

`@sample samples.collections.Collections.Aggregates.scanReduce`

```

*@SinceKotlin("1.3")
*@ExperimentalStdlibApi
*@kotlin.internal.InlineOnly
public inline fun
CharArray.scanReduceIndexed(operation: (index: Int, acc: Char, Char) -> Char): List<Char> {
    if (isEmpty())
        return emptyList()
    var accumulator = this[0]
    val result = ArrayList<Char>(size).apply {
        add(accumulator)
    }
    for (index in 1 until size) {
        accumulator = operation(index, accumulator, this[index])
        result.add(accumulator)
    }
    return result
}

```

`* Returns the sum of all values produced by [selector] function applied to each element in the array.`

```

public inline fun <T> Array<out T>.sumBy(selector: (T) -> Int): Int {
    var sum: Int = 0
    for (element in this) {
        sum += selector(element)
    }
    return sum
}

```

`* Returns the sum of all values produced by [selector] function applied to each element in the array.`

```

public inline fun ByteArray.sumBy(selector: (Byte) -> Int): Int {
    var sum: Int = 0
    for (element in this) {
        sum += selector(element)
    }
    return sum
}

```

`* Returns the sum of all values produced by [selector] function applied to each element in the array.`

```

public inline fun ShortArray.sumBy(selector: (Short) -> Int): Int {
    var sum: Int = 0
    for (element in this) {
        sum += selector(element)
    }
    return sum
}

```

`* Returns the sum of all values produced by [selector] function applied to each element in the array.`

```

public inline fun IntArray.sumBy(selector: (Int) -> Int): Int {
    var sum: Int = 0
    for (element in this) {
        sum += selector(element)
    }
    return sum
}

```

`* Returns the sum of all values produced by [selector] function applied to each element in the array.`

```

public inline fun LongArray.sumBy(selector: (Long) -> Int): Int {
    var sum: Int = 0
    for (element in this) {
        sum += selector(element)
    }
    return sum
}

```

`* Returns the sum of all values produced by [selector] function applied to each element in the array.`

```

public inline fun FloatArray.sumBy(selector: (Float) -> Int): Int {
    var sum: Int = 0
    for (element in this) {
        sum += selector(element)
    }
    return sum
}

```

`* Returns the sum of all values produced by [selector] function applied to each element in the array.`

```

public inline fun DoubleArray.sumBy(selector: (Double) -> Int): Int {
    var sum: Int = 0
    for (element in this) {
        sum += selector(element)
    }
    return sum
}

```

`* Returns the sum of all values produced by [selector] function applied to each element in the array.`

```

public inline fun BooleanArray.sumBy(selector: (Boolean) -> Int): Int {
    var sum: Int = 0
    for (element in this) {
        sum += selector(element)
    }
    return sum
}

```

`* Returns the sum of all values produced by [selector] function applied to each element in the array.`

```

public inline fun CharArray.sumBy(selector: (Char) -> Int): Int {
    var sum: Int = 0
    for (element in this) {
        sum += selector(element)
    }
    return sum
}

```

`* Returns the sum of all values produced by [selector] function applied to each element in the array.`

```

public inline fun <T> Array<out T>.sumByDouble(selector: (T) -> Double): Double {
    var sum: Double = 0.0
    for (element in this) {
        sum += selector(element)
    }
    return sum
}

```

`* Returns the sum of all values produced by [selector] function applied to each element in the array.`

```

public inline fun ByteArray.sumByDouble(selector: (Byte) -> Double): Double {
    var sum: Double = 0.0
    for (element in this) {
        sum += selector(element)
    }
    return sum
}

```

`* Returns the sum of all values produced by [selector] function applied to each element in the array.`

```

public inline fun ShortArray.sumByDouble(selector: (Short) -> Double): Double {
    var sum: Double = 0.0
    for (element in this) {
        sum += selector(element)
    }
    return sum
}

```

`* Returns the sum of all values produced by [selector] function applied to each element in the array.`

```

public inline fun IntArray.sumByDouble(selector: (Int) -> Double): Double {
    var sum: Double = 0.0
    for (element in this) {
        sum += selector(element)
    }
    return sum
}

```

`* Returns the sum of all values produced by [selector] function applied to each element in the array.`

```

public inline fun LongArray.sumByDouble(selector: (Long) -> Double): Double {
    var sum: Double = 0.0
    for (element in this) {
        sum += selector(element)
    }
    return sum
}

```

`* Returns the sum of all values produced by [selector] function applied to each element in the array.`

```

public inline fun FloatArray.sumByDouble(selector: (Float) -> Double): Double {
    var sum: Double = 0.0
    for (element in this) {
        sum += selector(element)
    }
    return sum
}

```

`* Returns the sum of all values produced by [selector] function applied to each element in the array.`

```

public inline fun DoubleArray.sumByDouble(selector:

```

```

(Double) -> Double): Double {\n  var sum: Double = 0.0\n  for (element in this) {\n    sum +=
selector(element)\n  }\n  return sum\n}\n\n/**\n * Returns the sum of all values produced by [selector] function
applied to each element in the array.\n */\npublic inline fun BooleanArray.sumByDouble(selector: (Boolean) ->
Double): Double {\n  var sum: Double = 0.0\n  for (element in this) {\n    sum += selector(element)\n  }\n
return sum\n}\n\n/**\n * Returns the sum of all values produced by [selector] function applied to each element in
the array.\n */\npublic inline fun CharArray.sumByDouble(selector: (Char) -> Double): Double {\n  var sum:
Double = 0.0\n  for (element in this) {\n    sum += selector(element)\n  }\n  return sum\n}\n\n/**\n * Returns
an original collection containing all the non-`null` elements, throwing an [IllegalArgumentException] if there are
any `null` elements.\n */\npublic fun <T : Any> Array<T?.>.requireNonNulls(): Array<T> {\n  for (element in this)
{\n    if (element == null) {\n      throw IllegalArgumentException("\null element found in $this.")\n    }\n  }\n
@Suppress("UNCHECKED_CAST")\n  return this as Array<T>\n}\n\n/**\n * Splits the original array into
pair of lists,\n * where *first* list contains elements for which [predicate] yielded `true`,\n * while *second* list
contains elements for which [predicate] yielded `false`.\n */\npublic inline fun <T> Array<out
T>.partition(predicate: (T) -> Boolean): Pair<List<T>, List<T>> {\n  val first = ArrayList<T>()\n  val second =
ArrayList<T>()\n  for (element in this) {\n    if (predicate(element)) {\n      first.add(element)\n    } else {\n
second.add(element)\n    }\n  }\n  return Pair(first, second)\n}\n\n/**\n * Splits the original array into pair
of lists,\n * where *first* list contains elements for which [predicate] yielded `true`,\n * while *second* list contains
elements for which [predicate] yielded `false`.\n */\npublic inline fun ByteArray.partition(predicate: (Byte) ->
Boolean): Pair<List<Byte>, List<Byte>> {\n  val first = ArrayList<Byte>()\n  val second = ArrayList<Byte>()\n
for (element in this) {\n  if (predicate(element)) {\n    first.add(element)\n  } else {\n
second.add(element)\n  }\n  }\n  return Pair(first, second)\n}\n\n/**\n * Splits the original array into pair of
lists,\n * where *first* list contains elements for which [predicate] yielded `true`,\n * while *second* list contains
elements for which [predicate] yielded `false`.\n */\npublic inline fun ShortArray.partition(predicate: (Short) ->
Boolean): Pair<List<Short>, List<Short>> {\n  val first = ArrayList<Short>()\n  val second =
ArrayList<Short>()\n  for (element in this) {\n    if (predicate(element)) {\n      first.add(element)\n    }
else {\n      second.add(element)\n    }\n  }\n  return Pair(first, second)\n}\n\n/**\n * Splits the original array
into pair of lists,\n * where *first* list contains elements for which [predicate] yielded `true`,\n * while *second* list
contains elements for which [predicate] yielded `false`.\n */\npublic inline fun IntArray.partition(predicate: (Int) ->
Boolean): Pair<List<Int>, List<Int>> {\n  val first = ArrayList<Int>()\n  val second = ArrayList<Int>()\n  for
(element in this) {\n    if (predicate(element)) {\n      first.add(element)\n    } else {\n
second.add(element)\n    }\n  }\n  return Pair(first, second)\n}\n\n/**\n * Splits the original array into pair of
lists,\n * where *first* list contains elements for which [predicate] yielded `true`,\n * while *second* list contains
elements for which [predicate] yielded `false`.\n */\npublic inline fun LongArray.partition(predicate: (Long) ->
Boolean): Pair<List<Long>, List<Long>> {\n  val first = ArrayList<Long>()\n  val second =
ArrayList<Long>()\n  for (element in this) {\n    if (predicate(element)) {\n      first.add(element)\n    } else
{\n      second.add(element)\n    }\n  }\n  return Pair(first, second)\n}\n\n/**\n * Splits the original array into
pair of lists,\n * where *first* list contains elements for which [predicate] yielded `true`,\n * while *second* list
contains elements for which [predicate] yielded `false`.\n */\npublic inline fun FloatArray.partition(predicate: (Float)
-> Boolean): Pair<List<Float>, List<Float>> {\n  val first = ArrayList<Float>()\n  val second =
ArrayList<Float>()\n  for (element in this) {\n    if (predicate(element)) {\n      first.add(element)\n    } else
{\n      second.add(element)\n    }\n  }\n  return Pair(first, second)\n}\n\n/**\n * Splits the original array into
pair of lists,\n * where *first* list contains elements for which [predicate] yielded `true`,\n * while *second* list
contains elements for which [predicate] yielded `false`.\n */\npublic inline fun DoubleArray.partition(predicate:
(Double) -> Boolean): Pair<List<Double>, List<Double>> {\n  val first = ArrayList<Double>()\n  val second =
ArrayList<Double>()\n  for (element in this) {\n    if (predicate(element)) {\n      first.add(element)\n    }
else {\n      second.add(element)\n    }\n  }\n  return Pair(first, second)\n}\n\n/**\n * Splits the original array
into pair of lists,\n * where *first* list contains elements for which [predicate] yielded `true`,\n * while *second* list
contains elements for which [predicate] yielded `false`.\n */\npublic inline fun BooleanArray.partition(predicate:

```

```

(Boolean) -> Boolean): Pair<List<Boolean>, List<Boolean>> {\n  val first = ArrayList<Boolean>()\n  val second
= ArrayList<Boolean>()\n  for (element in this) {\n    if (predicate(element)) {\n      first.add(element)\n
} else {\n      second.add(element)\n    }\n  }\n  return Pair(first, second)\n}\n\n/**\n * Splits the original
array into pair of lists,\n * where *first* list contains elements for which [predicate] yielded `true`,\n * while
*second* list contains elements for which [predicate] yielded `false`.\n */\n\npublic inline fun
CharArray.partition(predicate: (Char) -> Boolean): Pair<List<Char>, List<Char>> {\n  val first =
ArrayList<Char>()\n  val second = ArrayList<Char>()\n  for (element in this) {\n    if (predicate(element)) {\n
      first.add(element)\n    } else {\n      second.add(element)\n    }\n  }\n  return Pair(first,
second)\n}\n\n/**\n * Returns a list of pairs built from the elements of `this` array and the [other] array with the
same index.\n * The returned list has length of the shortest collection.\n */\n\n * @sample
samples.collections.Iterables.Operations.zipIterable\n */\n\npublic infix fun <T, R> Array<out T>.zip(other:
Array<out R>): List<Pair<T, R>> {\n  return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs
built from the elements of `this` array and the [other] array with the same index.\n * The returned list has length of
the shortest collection.\n */\n\n * @sample samples.collections.Iterables.Operations.zipIterable\n */\n\npublic infix fun
<R> ByteArray.zip(other: Array<out R>): List<Pair<Byte, R>> {\n  return zip(other) { t1, t2 -> t1 to t2
}\n}\n\n/**\n * Returns a list of pairs built from the elements of `this` array and the [other] array with the same
index.\n * The returned list has length of the shortest collection.\n */\n\n * @sample
samples.collections.Iterables.Operations.zipIterable\n */\n\npublic infix fun <R> ShortArray.zip(other: Array<out
R>): List<Pair<Short, R>> {\n  return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs built from
the elements of `this` array and the [other] array with the same index.\n * The returned list has length of the shortest
collection.\n */\n\n * @sample samples.collections.Iterables.Operations.zipIterable\n */\n\npublic infix fun <R>
IntArray.zip(other: Array<out R>): List<Pair<Int, R>> {\n  return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n *
Returns a list of pairs built from the elements of `this` array and the [other] array with the same index.\n * The
returned list has length of the shortest collection.\n */\n\n * @sample
samples.collections.Iterables.Operations.zipIterable\n */\n\npublic infix fun <R> LongArray.zip(other: Array<out
R>): List<Pair<Long, R>> {\n  return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs built from
the elements of `this` array and the [other] array with the same index.\n * The returned list has length of the shortest
collection.\n */\n\n * @sample samples.collections.Iterables.Operations.zipIterable\n */\n\npublic infix fun <R>
FloatArray.zip(other: Array<out R>): List<Pair<Float, R>> {\n  return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n *
Returns a list of pairs built from the elements of `this` array and the [other] array with the same index.\n * The
returned list has length of the shortest collection.\n */\n\n * @sample
samples.collections.Iterables.Operations.zipIterable\n */\n\npublic infix fun <R> DoubleArray.zip(other: Array<out
R>): List<Pair<Double, R>> {\n  return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs built
from the elements of `this` array and the [other] array with the same index.\n * The returned list has length of the
shortest collection.\n */\n\n * @sample samples.collections.Iterables.Operations.zipIterable\n */\n\npublic infix fun <R>
BooleanArray.zip(other: Array<out R>): List<Pair<Boolean, R>> {\n  return zip(other) { t1, t2 -> t1 to t2
}\n}\n\n/**\n * Returns a list of pairs built from the elements of `this` array and the [other] array with the same
index.\n * The returned list has length of the shortest collection.\n */\n\n * @sample
samples.collections.Iterables.Operations.zipIterable\n */\n\npublic infix fun <R> CharArray.zip(other: Array<out R>):
List<Pair<Char, R>> {\n  return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of values built from the
elements of `this` array and the [other] array with the same index\n * using the provided [transform] function
applied to each pair of elements.\n * The returned list has length of the shortest collection.\n */\n\n * @sample
samples.collections.Iterables.Operations.zipIterableWithTransform\n */\n\npublic inline fun <T, R, V> Array<out
T>.zip(other: Array<out R>, transform: (a: T, b: R) -> V): List<V> {\n  val size = minOf(size, other.size)\n  val
list = ArrayList<V>(size)\n  for (i in 0 until size) {\n    list.add(transform(this[i], other[i]))\n  }\n  return
list\n}\n\n/**\n * Returns a list of values built from the elements of `this` array and the [other] array with the same
index\n * using the provided [transform] function applied to each pair of elements.\n * The returned list has length
of the shortest collection.\n */\n\n * @sample samples.collections.Iterables.Operations.zipIterableWithTransform\n

```



```

*public inline fun <R, V> ByteArray.zip(other: Array<out R>, transform: (a: Byte, b: R) -> V): List<V> {
    val size = minOf(size, other.size)
    val list = ArrayList<V>(size)
    for (i in 0 until size) {
        list.add(transform(this[i], other[i]))
    }
    return list
}
* Returns a list of values built from the elements of `this` array and the [other] array with the same index
* using the provided [transform] function applied to each pair of elements.
* The returned list has length of the shortest collection.
* @sample
samples.collections.Iterables.Operations.zipIterableWithTransform

*public inline fun <R, V>
ShortArray.zip(other: Array<out R>, transform: (a: Short, b: R) -> V): List<V> {
    val size = minOf(size, other.size)
    val list = ArrayList<V>(size)
    for (i in 0 until size) {
        list.add(transform(this[i], other[i]))
    }
    return list
}
* Returns a list of values built from the elements of `this` array and the [other] array with the same index
* using the provided [transform] function applied to each pair of elements.
* The returned list has length of the shortest collection.
* @sample
samples.collections.Iterables.Operations.zipIterableWithTransform

*public inline fun <R, V>
IntArray.zip(other: Array<out R>, transform: (a: Int, b: R) -> V): List<V> {
    val size = minOf(size, other.size)
    val list = ArrayList<V>(size)
    for (i in 0 until size) {
        list.add(transform(this[i], other[i]))
    }
    return list
}
* Returns a list of values built from the elements of `this` array and the [other] array with the same index
* using the provided [transform] function applied to each pair of elements.
* The returned list has length of the shortest collection.
* @sample
samples.collections.Iterables.Operations.zipIterableWithTransform

*public inline fun <R, V>
LongArray.zip(other: Array<out R>, transform: (a: Long, b: R) -> V): List<V> {
    val size = minOf(size, other.size)
    val list = ArrayList<V>(size)
    for (i in 0 until size) {
        list.add(transform(this[i], other[i]))
    }
    return list
}
* Returns a list of values built from the elements of `this` array and the [other] array with the same index
* using the provided [transform] function applied to each pair of elements.
* The returned list has length of the shortest collection.
* @sample
samples.collections.Iterables.Operations.zipIterableWithTransform

*public inline fun <R, V>
FloatArray.zip(other: Array<out R>, transform: (a: Float, b: R) -> V): List<V> {
    val size = minOf(size, other.size)
    val list = ArrayList<V>(size)
    for (i in 0 until size) {
        list.add(transform(this[i], other[i]))
    }
    return list
}
* Returns a list of values built from the elements of `this` array and the [other] array with the same index
* using the provided [transform] function applied to each pair of elements.
* The returned list has length of the shortest collection.
* @sample
samples.collections.Iterables.Operations.zipIterableWithTransform

*public inline fun <R, V>
DoubleArray.zip(other: Array<out R>, transform: (a: Double, b: R) -> V): List<V> {
    val size = minOf(size, other.size)
    val list = ArrayList<V>(size)
    for (i in 0 until size) {
        list.add(transform(this[i], other[i]))
    }
    return list
}
* Returns a list of values built from the elements of `this` array and the [other] array with the same index
* using the provided [transform] function applied to each pair of elements.
* The returned list has length of the shortest collection.
* @sample
samples.collections.Iterables.Operations.zipIterableWithTransform

*public inline fun <R, V>
BooleanArray.zip(other: Array<out R>, transform: (a: Boolean, b: R) -> V): List<V> {
    val size = minOf(size, other.size)
    val list = ArrayList<V>(size)
    for (i in 0 until size) {
        list.add(transform(this[i], other[i]))
    }
    return list
}
* Returns a list of values built from the elements of `this` array and the [other] array with the same index
* using the provided [transform] function applied to each pair of elements.
* The returned list has length of the shortest collection.
* @sample
samples.collections.Iterables.Operations.zipIterableWithTransform

*public inline fun <R, V>
CharArray.zip(other: Array<out R>, transform: (a: Char, b: R) -> V): List<V> {
    val size = minOf(size, other.size)
    val list = ArrayList<V>(size)
    for (i in 0 until size) {
        list.add(transform(this[i], other[i]))
    }
    return list
}
* Returns a list of pairs built from the elements of `this` collection and [other] array with the same index.
* The returned list has length of the shortest collection.
* @sample
samples.collections.Iterables.Operations.zipIterable

*public infix fun <T, R> Array<out T>.zip(other: Iterable<R>): List<Pair<T, R>> {
    return zip(other) { t1, t2 -> t1 to t2 }
}
* Returns a list of pairs built from the elements of `this` collection and [other] array with the same index.
* The returned list has length of the

```

```

shortest collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterable\n * \npublic infix fun <R>
ByteArray.zip(other: Iterable<R>): List<Pair<Byte, R>> {\n    return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n *
Returns a list of pairs built from the elements of `this` collection and [other] array with the same index.\n * The
returned list has length of the shortest collection.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterable\n * \npublic infix fun <R> ShortArray.zip(other: Iterable<R>):
List<Pair<Short, R>> {\n    return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs built from the
elements of `this` collection and [other] array with the same index.\n * The returned list has length of the shortest
collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterable\n * \npublic infix fun <R>
IntArray.zip(other: Iterable<R>): List<Pair<Int, R>> {\n    return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n *
Returns a list of pairs built from the elements of `this` collection and [other] array with the same index.\n * The
returned list has length of the shortest collection.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterable\n * \npublic infix fun <R> LongArray.zip(other: Iterable<R>):
List<Pair<Long, R>> {\n    return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs built from the
elements of `this` collection and [other] array with the same index.\n * The returned list has length of the shortest
collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterable\n * \npublic infix fun <R>
FloatArray.zip(other: Iterable<R>): List<Pair<Float, R>> {\n    return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n *
Returns a list of pairs built from the elements of `this` collection and [other] array with the same index.\n * The
returned list has length of the shortest collection.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterable\n * \npublic infix fun <R> DoubleArray.zip(other:
Iterable<R>): List<Pair<Double, R>> {\n    return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs
built from the elements of `this` collection and [other] array with the same index.\n * The returned list has length of
the shortest collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterable\n * \npublic infix fun
<R> BooleanArray.zip(other: Iterable<R>): List<Pair<Boolean, R>> {\n    return zip(other) { t1, t2 -> t1 to t2
}\n}\n\n/**\n * Returns a list of pairs built from the elements of `this` collection and [other] array with the same
index.\n * The returned list has length of the shortest collection.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterable\n * \npublic infix fun <R> CharArray.zip(other: Iterable<R>):
List<Pair<Char, R>> {\n    return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of values built from the
elements of `this` array and the [other] collection with the same index\n * using the provided [transform] function
applied to each pair of elements.\n * The returned list has length of the shortest collection.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterableWithTransform\n * \npublic inline fun <T, R, V> Array<out
T>.zip(other: Iterable<R>, transform: (a: T, b: R) -> V): List<V> {\n    val arraySize = size\n    val list =
ArrayList<V>(minOf(other.collectionSizeOrDefault(10), arraySize))\n    var i = 0\n    for (element in other) {\n
if (i >= arraySize) break\n        list.add(transform(this[i++], element))\n    }\n    return list\n}\n\n/**\n * Returns a
list of values built from the elements of `this` array and the [other] collection with the same index\n * using the
provided [transform] function applied to each pair of elements.\n * The returned list has length of the shortest
collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterableWithTransform\n * \npublic inline
fun <R, V> ByteArray.zip(other: Iterable<R>, transform: (a: Byte, b: R) -> V): List<V> {\n    val arraySize = size\n
val list = ArrayList<V>(minOf(other.collectionSizeOrDefault(10), arraySize))\n    var i = 0\n    for (element in
other) {\n        if (i >= arraySize) break\n        list.add(transform(this[i++], element))\n    }\n    return list\n}\n\n/**\n *
Returns a list of values built from the elements of `this` array and the [other] collection with the same index\n *
using the provided [transform] function applied to each pair of elements.\n * The returned list has length of the
shortest collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterableWithTransform\n * \npublic
inline fun <R, V> ShortArray.zip(other: Iterable<R>, transform: (a: Short, b: R) -> V): List<V> {\n    val arraySize =
size\n    val list = ArrayList<V>(minOf(other.collectionSizeOrDefault(10), arraySize))\n    var i = 0\n    for
(element in other) {\n        if (i >= arraySize) break\n        list.add(transform(this[i++], element))\n    }\n    return
list\n}\n\n/**\n * Returns a list of values built from the elements of `this` array and the [other] collection with the
same index\n * using the provided [transform] function applied to each pair of elements.\n * The returned list has
length of the shortest collection.\n * \n * @sample

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samples.collections.Iterables.Operations.zipIterableWithTransform\n *^\npublic inline fun <R, V>
IntArray.zip(other: Iterable<R>, transform: (a: Int, b: R) -> V): List<V> {\n  val arraySize = size\n  val list =
ArrayList<V>(minOf(other.collectionSizeOrDefault(10), arraySize))\n  var i = 0\n  for (element in other) {\n
if (i >= arraySize) break\n    list.add(transform(this[i++], element))\n  }\n  return list\n}\n\n/**\n * Returns a
list of values built from the elements of `this` array and the [other] collection with the same index\n * using the
provided [transform] function applied to each pair of elements.\n * The returned list has length of the shortest
collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterableWithTransform\n *^\npublic inline
fun <R, V> LongArray.zip(other: Iterable<R>, transform: (a: Long, b: R) -> V): List<V> {\n  val arraySize =
size\n  val list = ArrayList<V>(minOf(other.collectionSizeOrDefault(10), arraySize))\n  var i = 0\n  for (element
in other) {\n    if (i >= arraySize) break\n    list.add(transform(this[i++], element))\n  }\n  return
list\n}\n\n/**\n * Returns a list of values built from the elements of `this` array and the [other] collection with the
same index\n * using the provided [transform] function applied to each pair of elements.\n * The returned list has
length of the shortest collection.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterableWithTransform\n *^\npublic inline fun <R, V>
FloatArray.zip(other: Iterable<R>, transform: (a: Float, b: R) -> V): List<V> {\n  val arraySize = size\n  val list =
ArrayList<V>(minOf(other.collectionSizeOrDefault(10), arraySize))\n  var i = 0\n  for (element in other) {\n
if (i >= arraySize) break\n    list.add(transform(this[i++], element))\n  }\n  return list\n}\n\n/**\n * Returns a
list of values built from the elements of `this` array and the [other] collection with the same index\n * using the
provided [transform] function applied to each pair of elements.\n * The returned list has length of the shortest
collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterableWithTransform\n *^\npublic inline
fun <R, V> DoubleArray.zip(other: Iterable<R>, transform: (a: Double, b: R) -> V): List<V> {\n  val arraySize =
size\n  val list = ArrayList<V>(minOf(other.collectionSizeOrDefault(10), arraySize))\n  var i = 0\n  for (element
in other) {\n    if (i >= arraySize) break\n    list.add(transform(this[i++], element))\n  }\n  return
list\n}\n\n/**\n * Returns a list of values built from the elements of `this` array and the [other] collection with the
same index\n * using the provided [transform] function applied to each pair of elements.\n * The returned list has
length of the shortest collection.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterableWithTransform\n *^\npublic inline fun <R, V>
BooleanArray.zip(other: Iterable<R>, transform: (a: Boolean, b: R) -> V): List<V> {\n  val arraySize = size\n  val
list = ArrayList<V>(minOf(other.collectionSizeOrDefault(10), arraySize))\n  var i = 0\n  for (element in other)
{\n    if (i >= arraySize) break\n    list.add(transform(this[i++], element))\n  }\n  return list\n}\n\n/**\n *
Returns a list of values built from the elements of `this` array and the [other] collection with the same index\n *
using the provided [transform] function applied to each pair of elements.\n * The returned list has length of the
shortest collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterableWithTransform\n
*^\npublic inline fun <R, V> CharArray.zip(other: Iterable<R>, transform: (a: Char, b: R) -> V): List<V> {\n  val
arraySize = size\n  val list = ArrayList<V>(minOf(other.collectionSizeOrDefault(10), arraySize))\n  var i = 0\n
for (element in other) {\n    if (i >= arraySize) break\n    list.add(transform(this[i++], element))\n  }\n  return
list\n}\n\n/**\n * Returns a list of pairs built from the elements of `this` array and the [other] array with the same
index.\n * The returned list has length of the shortest collection.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterable\n *^\npublic infix fun ByteArray.zip(other: ByteArray):
List<Pair<Byte, Byte>> {\n  return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs built from
the elements of `this` array and the [other] array with the same index.\n * The returned list has length of the
shortest collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterable\n *^\npublic infix fun
ShortArray.zip(other: ShortArray): List<Pair<Short, Short>> {\n  return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n
* Returns a list of pairs built from the elements of `this` array and the [other] array with the same index.\n *
The returned list has length of the shortest collection.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterable\n *^\npublic infix fun IntArray.zip(other: IntArray):
List<Pair<Int, Int>> {\n  return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs built from
the elements of `this` array and the [other] array with the same index.\n * The returned list has length of the
shortest

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collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterable\n * \npublic infix fun
LongArray.zip(other: LongArray): List<Pair<Long, Long>> {\n  return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs built from the elements of `this` array and the [other] array with the same index.\n * The
returned list has length of the shortest collection.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterable\n * \npublic infix fun FloatArray.zip(other: FloatArray):
List<Pair<Float, Float>> {\n  return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs built from
the elements of `this` array and the [other] array with the same index.\n * The returned list has length of the shortest
collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterable\n * \npublic infix fun
DoubleArray.zip(other: DoubleArray): List<Pair<Double, Double>> {\n  return zip(other) { t1, t2 -> t1 to t2
}\n}\n\n/**\n * Returns a list of pairs built from the elements of `this` array and the [other] array with the same
index.\n * The returned list has length of the shortest collection.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterable\n * \npublic infix fun BooleanArray.zip(other: BooleanArray):
List<Pair<Boolean, Boolean>> {\n  return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs built
from the elements of `this` array and the [other] array with the same index.\n * The returned list has length of the
shortest collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterable\n * \npublic infix fun
CharArray.zip(other: CharArray): List<Pair<Char, Char>> {\n  return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n *
Returns a list of values built from the elements of `this` array and the [other] array with the same index\n * using the
provided [transform] function applied to each pair of elements.\n * The returned list has length of the shortest
array.\n * \n * @sample samples.collections.Iterables.Operations.zipIterableWithTransform\n * \npublic inline fun
<V> ByteArray.zip(other: ByteArray, transform: (a: Byte, b: Byte) -> V): List<V> {\n  val size = minOf(size,
other.size)\n  val list = ArrayList<V>(size)\n  for (i in 0 until size) {\n    list.add(transform(this[i], other[i]))\n
}\n  return list\n}\n\n/**\n * Returns a list of values built from the elements of `this` array and the [other] array
with the same index\n * using the provided [transform] function applied to each pair of elements.\n * The returned
list has length of the shortest array.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterableWithTransform\n * \npublic inline fun <V>
ShortArray.zip(other: ShortArray, transform: (a: Short, b: Short) -> V): List<V> {\n  val size = minOf(size,
other.size)\n  val list = ArrayList<V>(size)\n  for (i in 0 until size) {\n    list.add(transform(this[i], other[i]))\n
}\n  return list\n}\n\n/**\n * Returns a list of values built from the elements of `this` array and the [other] array
with the same index\n * using the provided [transform] function applied to each pair of elements.\n * The returned
list has length of the shortest array.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterableWithTransform\n * \npublic inline fun <V> IntArray.zip(other:
IntArray, transform: (a: Int, b: Int) -> V): List<V> {\n  val size = minOf(size, other.size)\n  val list =
ArrayList<V>(size)\n  for (i in 0 until size) {\n    list.add(transform(this[i], other[i]))\n  }\n  return
list\n}\n\n/**\n * Returns a list of values built from the elements of `this` array and the [other] array with the same
index\n * using the provided [transform] function applied to each pair of elements.\n * The returned list has length
of the shortest array.\n * \n * @sample samples.collections.Iterables.Operations.zipIterableWithTransform\n
*\npublic inline fun <V> LongArray.zip(other: LongArray, transform: (a: Long, b: Long) -> V): List<V> {\n  val
size = minOf(size, other.size)\n  val list = ArrayList<V>(size)\n  for (i in 0 until size) {\n
list.add(transform(this[i], other[i]))\n  }\n  return list\n}\n\n/**\n * Returns a list of values built from the elements
of `this` array and the [other] array with the same index\n * using the provided [transform] function applied to each
pair of elements.\n * The returned list has length of the shortest array.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterableWithTransform\n * \npublic inline fun <V>
FloatArray.zip(other: FloatArray, transform: (a: Float, b: Float) -> V): List<V> {\n  val size = minOf(size,
other.size)\n  val list = ArrayList<V>(size)\n  for (i in 0 until size) {\n    list.add(transform(this[i], other[i]))\n
}\n  return list\n}\n\n/**\n * Returns a list of values built from the elements of `this` array and the [other] array
with the same index\n * using the provided [transform] function applied to each pair of elements.\n * The returned
list has length of the shortest array.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterableWithTransform\n * \npublic inline fun <V>

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DoubleArray.zip(other: DoubleArray, transform: (a: Double, b: Double) -> V): List<V> {\n  val size = minOf(size,
other.size)\n  val list = ArrayList<V>(size)\n  for (i in 0 until size) {\n    list.add(transform(this[i], other[i]))\n  }\n  return list}\n\n/**\n * Returns a list of values built from the elements of `this` array and the [other] array
with the same index\n * using the provided [transform] function applied to each pair of elements.\n * The returned
list has length of the shortest array.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterableWithTransform\n */\npublic inline fun <V>
BooleanArray.zip(other: BooleanArray, transform: (a: Boolean, b: Boolean) -> V): List<V> {\n  val size =
minOf(size, other.size)\n  val list = ArrayList<V>(size)\n  for (i in 0 until size) {\n    list.add(transform(this[i],
other[i]))\n  }\n  return list}\n\n/**\n * Returns a list of values built from the elements of `this` array and the
[other] array with the same index\n * using the provided [transform] function applied to each pair of elements.\n *
The returned list has length of the shortest array.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterableWithTransform\n */\npublic inline fun <V>
CharArray.zip(other: CharArray, transform: (a: Char, b: Char) -> V): List<V> {\n  val size = minOf(size,
other.size)\n  val list = ArrayList<V>(size)\n  for (i in 0 until size) {\n    list.add(transform(this[i], other[i]))\n  }\n  return list}\n\n/**\n * Appends the string from all the elements separated using [separator] and using the
given [prefix] and [postfix] if supplied.\n * \n * If the collection could be huge, you can specify a non-negative value
of [limit], in which case only the first [limit]\n * elements will be appended, followed by the [truncated] string
(which defaults to "...").\n * \n * @sample samples.collections.Collections.Transformations.joinTo\n */\npublic fun
<T, A : Appendable> Array<out T>.joinTo(buffer: A, separator: CharSequence = "\n", prefix: CharSequence = "\n",
postfix: CharSequence = "\n", limit: Int = -1, truncated: CharSequence = "...", transform: ((T) -> CharSequence)? =
null): A {\n  buffer.append(prefix)\n  var count = 0\n  for (element in this) {\n    if (++count > 1)
buffer.append(separator)\n    if (limit < 0 || count <= limit) {\n      buffer.appendElement(element, transform)\n
    } else break\n  }\n  if (limit >= 0 && count > limit) buffer.append(truncated)\n  buffer.append(postfix)\n  return buffer}\n\n/**\n * Appends the string from all the elements separated using [separator] and using the given
[prefix] and [postfix] if supplied.\n * \n * If the collection could be huge, you can specify a non-negative value of
[limit], in which case only the first [limit]\n * elements will be appended, followed by the [truncated] string (which
defaults to "...").\n * \n * @sample samples.collections.Collections.Transformations.joinTo\n */\npublic fun <A :
Appendable> ByteArray.joinTo(buffer: A, separator: CharSequence = "\n", prefix: CharSequence = "\n", postfix:
CharSequence = "\n", limit: Int = -1, truncated: CharSequence = "...", transform: ((Byte) -> CharSequence)? =
null): A {\n  buffer.append(prefix)\n  var count = 0\n  for (element in this) {\n    if (++count > 1)
buffer.append(separator)\n    if (limit < 0 || count <= limit) {\n      if (transform != null)\n        buffer.append(transform(element))\n      else\n        buffer.append(element.toString())\n    } else break\n  }\n  if (limit >= 0 && count > limit) buffer.append(truncated)\n  buffer.append(postfix)\n  return
buffer}\n\n/**\n * Appends the string from all the elements separated using [separator] and using the given
[prefix] and [postfix] if supplied.\n * \n * If the collection could be huge, you can specify a non-negative value of
[limit], in which case only the first [limit]\n * elements will be appended, followed by the [truncated] string (which
defaults to "...").\n * \n * @sample samples.collections.Collections.Transformations.joinTo\n */\npublic fun <A :
Appendable> ShortArray.joinTo(buffer: A, separator: CharSequence = "\n", prefix: CharSequence = "\n", postfix:
CharSequence = "\n", limit: Int = -1, truncated: CharSequence = "...", transform: ((Short) -> CharSequence)? =
null): A {\n  buffer.append(prefix)\n  var count = 0\n  for (element in this) {\n    if (++count > 1)
buffer.append(separator)\n    if (limit < 0 || count <= limit) {\n      if (transform != null)\n        buffer.append(transform(element))\n      else\n        buffer.append(element.toString())\n    } else break\n  }\n  if (limit >= 0 && count > limit) buffer.append(truncated)\n  buffer.append(postfix)\n  return
buffer}\n\n/**\n * Appends the string from all the elements separated using [separator] and using the given
[prefix] and [postfix] if supplied.\n * \n * If the collection could be huge, you can specify a non-negative value of
[limit], in which case only the first [limit]\n * elements will be appended, followed by the [truncated] string (which
defaults to "...").\n * \n * @sample samples.collections.Collections.Transformations.joinTo\n */\npublic fun <A :
Appendable> IntArray.joinTo(buffer: A, separator: CharSequence = "\n", prefix: CharSequence = "\n", postfix:

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CharSequence = \"\", limit: Int = -1, truncated: CharSequence = \"...\", transform: ((Int) -> CharSequence)? = null):
A {
    buffer.append(prefix)
    var count = 0
    for (element in this) {
        if (++count > 1)
            buffer.append(separator)
        if (limit < 0 || count <= limit) {
            if (transform != null)
                buffer.append(transform(element))
            else
                buffer.append(element.toString())
        } else break
    }
    if (limit >= 0 && count > limit) buffer.append(truncated)
    buffer.append(postfix)
    return
}
}

Appendable CharSequence * Appends the string from all the elements separated using [separator] and using the given
[prefix] and [postfix] if supplied.
If the collection could be huge, you can specify a non-negative value of
[limit], in which case only the first [limit] elements will be appended, followed by the [truncated] string (which
defaults to \"...\").
@sample samples.collections.Collections.Transformations.joinTo
public fun <A :
Appendable> LongArray.joinTo(buffer: A, separator: CharSequence = \", \", prefix: CharSequence = \"\", postfix:
CharSequence = \"\", limit: Int = -1, truncated: CharSequence = \"...\", transform: ((Long) -> CharSequence)? =
null): A {
    buffer.append(prefix)
    var count = 0
    for (element in this) {
        if (++count > 1)
            buffer.append(separator)
        if (limit < 0 || count <= limit) {
            if (transform != null)
                buffer.append(transform(element))
            else
                buffer.append(element.toString())
        } else break
    }
    if (limit >= 0 && count > limit) buffer.append(truncated)
    buffer.append(postfix)
    return
}
}

Appendable CharSequence * Appends the string from all the elements separated using [separator] and using the given
[prefix] and [postfix] if supplied.
If the collection could be huge, you can specify a non-negative value of
[limit], in which case only the first [limit] elements will be appended, followed by the [truncated] string (which
defaults to \"...\").
@sample samples.collections.Collections.Transformations.joinTo
public fun <A :
Appendable> FloatArray.joinTo(buffer: A, separator: CharSequence = \", \", prefix: CharSequence = \"\", postfix:
CharSequence = \"\", limit: Int = -1, truncated: CharSequence = \"...\", transform: ((Float) -> CharSequence)? =
null): A {
    buffer.append(prefix)
    var count = 0
    for (element in this) {
        if (++count > 1)
            buffer.append(separator)
        if (limit < 0 || count <= limit) {
            if (transform != null)
                buffer.append(transform(element))
            else
                buffer.append(element.toString())
        } else break
    }
    if (limit >= 0 && count > limit) buffer.append(truncated)
    buffer.append(postfix)
    return
}
}

Appendable CharSequence * Appends the string from all the elements separated using [separator] and using the given
[prefix] and [postfix] if supplied.
If the collection could be huge, you can specify a non-negative value of
[limit], in which case only the first [limit] elements will be appended, followed by the [truncated] string (which
defaults to \"...\").
@sample samples.collections.Collections.Transformations.joinTo
public fun <A :
Appendable> DoubleArray.joinTo(buffer: A, separator: CharSequence = \", \", prefix: CharSequence = \"\", postfix:
CharSequence = \"\", limit: Int = -1, truncated: CharSequence = \"...\", transform: ((Double) -> CharSequence)? =
null): A {
    buffer.append(prefix)
    var count = 0
    for (element in this) {
        if (++count > 1)
            buffer.append(separator)
        if (limit < 0 || count <= limit) {
            if (transform != null)
                buffer.append(transform(element))
            else
                buffer.append(element.toString())
        } else break
    }
    if (limit >= 0 && count > limit) buffer.append(truncated)
    buffer.append(postfix)
    return
}
}

Appendable CharSequence * Appends the string from all the elements separated using [separator] and using the given
[prefix] and [postfix] if supplied.
If the collection could be huge, you can specify a non-negative value of
[limit], in which case only the first [limit] elements will be appended, followed by the [truncated] string (which
defaults to \"...\").
@sample samples.collections.Collections.Transformations.joinTo
public fun <A :
Appendable> BooleanArray.joinTo(buffer: A, separator: CharSequence = \", \", prefix: CharSequence = \"\",
postfix: CharSequence = \"\", limit: Int = -1, truncated: CharSequence = \"...\", transform: ((Boolean) ->
CharSequence)? = null): A {
    buffer.append(prefix)
    var count = 0
    for (element in this) {
        if (++count
> 1) buffer.append(separator)
        if (limit < 0 || count <= limit) {
            if (transform != null)
                buffer.append(transform(element))
            else
                buffer.append(element.toString())
        } else break
    }
    if (limit >= 0 && count > limit) buffer.append(truncated)
    buffer.append(postfix)
    return
}
}

Appendable CharSequence * Appends the string from all the elements separated using [separator] and using the given
[prefix] and [postfix] if supplied.
If the collection could be huge, you can specify a non-negative value of
[limit], in which case only the first [limit] elements will be appended, followed by the [truncated] string (which

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defaults to "...").\n * \n * @sample samples.collections.Collections.Transformations.joinTo\n * \npublic fun <A :
Appendable> CharArray.joinTo(buffer: A, separator: CharSequence = "\", \", prefix: CharSequence = "\"", postfix:
CharSequence = "\"", limit: Int = -1, truncated: CharSequence = "...\", transform: ((Char) -> CharSequence)? =
null): A {\n  buffer.append(prefix)\n  var count = 0\n  for (element in this) {\n    if (++count > 1)
buffer.append(separator)\n    if (limit < 0 || count <= limit) {\n      if (transform != null)\nbuffer.append(transform(element))\n    else\n      buffer.append(element)\n    } else break\n  }\n  if
(limit >= 0 && count > limit) buffer.append(truncated)\n  buffer.append(postfix)\n  return buffer\n}\n\n/n/**\n *
Creates a string from all the elements separated using [separator] and using the given [prefix] and [postfix] if
supplied.\n * \n * If the collection could be huge, you can specify a non-negative value of [limit], in which case only
the first [limit]\n * elements will be appended, followed by the [truncated] string (which defaults to "...").\n * \n *
@sample samples.collections.Collections.Transformations.joinToString\n * \npublic fun <T> Array<out
T>.joinToString(separator: CharSequence = "\", \", prefix: CharSequence = "\"", postfix: CharSequence = "\"", limit:
Int = -1, truncated: CharSequence = "...\", transform: ((T) -> CharSequence)? = null): String {\n  return
joinTo(StringBuilder(), separator, prefix, postfix, limit, truncated, transform).toString()\n}\n\n/n/**\n *
Creates a string from all the elements separated using [separator] and using the given [prefix] and [postfix] if
supplied.\n * \n * If the collection could be huge, you can specify a non-negative value of [limit], in which case only
the first [limit]\n * elements will be appended, followed by the [truncated] string (which defaults to "...").\n * \n *
@sample samples.collections.Collections.Transformations.joinToString\n * \npublic fun ByteArray.joinToString(separator:
CharSequence = "\", \", prefix: CharSequence = "\"", postfix: CharSequence = "\"", limit: Int = -1, truncated:
CharSequence = "...\", transform: ((Byte) -> CharSequence)? = null): String {\n  return joinTo(StringBuilder(),
separator, prefix, postfix, limit, truncated, transform).toString()\n}\n\n/n/**\n *
Creates a string from all the elements separated using [separator] and using the given [prefix] and [postfix] if
supplied.\n * \n * If the collection could be huge, you can specify a non-negative value of [limit], in which case only
the first [limit]\n * elements will be appended, followed by the [truncated] string (which defaults to "...").\n * \n *
@sample samples.collections.Collections.Transformations.joinToString\n * \npublic fun ShortArray.joinToString(separator:
CharSequence = "\", \", prefix: CharSequence = "\"", postfix: CharSequence = "\"", limit: Int = -1, truncated:
CharSequence = "...\", transform: ((Short) -> CharSequence)? = null): String {\n  return joinTo(StringBuilder(),
separator, prefix, postfix, limit, truncated, transform).toString()\n}\n\n/n/**\n *
Creates a string from all the elements separated using [separator] and using the given [prefix] and [postfix] if
supplied.\n * \n * If the collection could be huge, you can specify a non-negative value of [limit], in which case only
the first [limit]\n * elements will be appended, followed by the [truncated] string (which defaults to "...").\n * \n *
@sample samples.collections.Collections.Transformations.joinToString\n * \npublic fun IntArray.joinToString(separator:
CharSequence = "\", \", prefix: CharSequence = "\"", postfix: CharSequence = "\"", limit: Int = -1, truncated:
CharSequence = "...\", transform: ((Int) -> CharSequence)? = null): String {\n  return joinTo(StringBuilder(),
separator, prefix, postfix, limit, truncated, transform).toString()\n}\n\n/n/**\n *
Creates a string from all the elements separated using [separator] and using the given [prefix] and [postfix] if
supplied.\n * \n * If the collection could be huge, you can specify a non-negative value of [limit], in which case only
the first [limit]\n * elements will be appended, followed by the [truncated] string (which defaults to "...").\n * \n *
@sample samples.collections.Collections.Transformations.joinToString\n * \npublic fun LongArray.joinToString(separator:
CharSequence = "\", \", prefix: CharSequence = "\"", postfix: CharSequence = "\"", limit: Int = -1, truncated:
CharSequence = "...\", transform: ((Long) -> CharSequence)? = null): String {\n  return joinTo(StringBuilder(),
separator, prefix, postfix, limit, truncated, transform).toString()\n}\n\n/n/**\n *
Creates a string from all the elements separated using [separator] and using the given [prefix] and [postfix] if
supplied.\n * \n * If the collection could be huge, you can specify a non-negative value of [limit], in which case only
the first [limit]\n * elements will be appended, followed by the [truncated] string (which defaults to "...").\n * \n *
@sample samples.collections.Collections.Transformations.joinToString\n * \npublic fun FloatArray.joinToString(separator:
CharSequence = "\", \", prefix: CharSequence = "\"", postfix: CharSequence = "\"", limit: Int = -1, truncated:
CharSequence = "...\", transform: ((Float) -> CharSequence)? = null): String {\n  return joinTo(StringBuilder(),

```

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separator, prefix, postfix, limit, truncated, transform).toString()\n\n/**\n * Creates a string from all the elements
separated using [separator] and using the given [prefix] and [postfix] if supplied.\n * \n * If the collection could be
huge, you can specify a non-negative value of [limit], in which case only the first [limit]\n * elements will be
appended, followed by the [truncated] string (which defaults to "...").\n * \n * @sample
samples.collections.Collections.Transformations.joinToString\n *^\npublic fun DoubleArray.joinToString(separator:
CharSequence = "\", \"", prefix: CharSequence = "\", postfix: CharSequence = "\", limit: Int = -1, truncated:
CharSequence = "...\", transform: ((Double) -> CharSequence)? = null): String {\n    return joinTo(StringBuilder(),
separator, prefix, postfix, limit, truncated, transform).toString()\n}\n\n/**\n * Creates a string from all the elements
separated using [separator] and using the given [prefix] and [postfix] if supplied.\n * \n * If the collection could be
huge, you can specify a non-negative value of [limit], in which case only the first [limit]\n * elements will be
appended, followed by the [truncated] string (which defaults to "...").\n * \n * @sample
samples.collections.Collections.Transformations.joinToString\n *^\npublic fun
BooleanArray.joinToString(separator: CharSequence = "\", \"", prefix: CharSequence = "\", postfix: CharSequence =
\"", limit: Int = -1, truncated: CharSequence = "...\", transform: ((Boolean) -> CharSequence)? = null): String {\n
return joinTo(StringBuilder(), separator, prefix, postfix, limit, truncated, transform).toString()\n}\n\n/**\n * Creates
a string from all the elements separated using [separator] and using the given [prefix] and [postfix] if supplied.\n * \n
* If the collection could be huge, you can specify a non-negative value of [limit], in which case only the first
[limit]\n * elements will be appended, followed by the [truncated] string (which defaults to "...").\n * \n * @sample
samples.collections.Collections.Transformations.joinToString\n *^\npublic fun CharArray.joinToString(separator:
CharSequence = "\", \"", prefix: CharSequence = "\", postfix: CharSequence = "\", limit: Int = -1, truncated:
CharSequence = "...\", transform: ((Char) -> CharSequence)? = null): String {\n    return joinTo(StringBuilder(),
separator, prefix, postfix, limit, truncated, transform).toString()\n}\n\n/**\n * Creates an [Iterable] instance that
wraps the original array returning its elements when being iterated.\n *^\npublic fun <T> Array<out T>.asIterable():
Iterable<T> {\n    if (isEmpty()) return emptyList()\n    return Iterable { this.iterator() }\n}\n\n/**\n * Creates an
[Iterable] instance that wraps the original array returning its elements when being iterated.\n *^\npublic fun
ByteArray.asIterable(): Iterable<Byte> {\n    if (isEmpty()) return emptyList()\n    return Iterable { this.iterator()
}\n}\n\n/**\n * Creates an [Iterable] instance that wraps the original array returning its elements when being
iterated.\n *^\npublic fun ShortArray.asIterable(): Iterable<Short> {\n    if (isEmpty()) return emptyList()\n    return
Iterable { this.iterator() }\n}\n\n/**\n * Creates an [Iterable] instance that wraps the original array returning its
elements when being iterated.\n *^\npublic fun IntArray.asIterable(): Iterable<Int> {\n    if (isEmpty()) return
emptyList()\n    return Iterable { this.iterator() }\n}\n\n/**\n * Creates an [Iterable] instance that wraps the original
array returning its elements when being iterated.\n *^\npublic fun LongArray.asIterable(): Iterable<Long> {\n    if
(isEmpty()) return emptyList()\n    return Iterable { this.iterator() }\n}\n\n/**\n * Creates an [Iterable] instance that
wraps the original array returning its elements when being iterated.\n *^\npublic fun FloatArray.asIterable():
Iterable<Float> {\n    if (isEmpty()) return emptyList()\n    return Iterable { this.iterator() }\n}\n\n/**\n * Creates an
[Iterable] instance that wraps the original array returning its elements when being iterated.\n *^\npublic fun
DoubleArray.asIterable(): Iterable<Double> {\n    if (isEmpty()) return emptyList()\n    return Iterable {
this.iterator() }\n}\n\n/**\n * Creates an [Iterable] instance that wraps the original array returning its elements when
being iterated.\n *^\npublic fun BooleanArray.asIterable(): Iterable<Boolean> {\n    if (isEmpty()) return
emptyList()\n    return Iterable { this.iterator() }\n}\n\n/**\n * Creates an [Iterable] instance that wraps the original
array returning its elements when being iterated.\n *^\npublic fun CharArray.asIterable(): Iterable<Char> {\n    if
(isEmpty()) return emptyList()\n    return Iterable { this.iterator() }\n}\n\n/**\n * Creates a [Sequence] instance that
wraps the original array returning its elements when being iterated.\n * \n * @sample
samples.collections.Sequences.Building.sequenceFromArray\n *^\npublic fun <T> Array<out T>.asSequence():
Sequence<T> {\n    if (isEmpty()) return emptySequence()\n    return Sequence { this.iterator() }\n}\n\n/**\n *
Creates a [Sequence] instance that wraps the original array returning its elements when being iterated.\n * \n *
@sample samples.collections.Sequences.Building.sequenceFromArray\n *^\npublic fun ByteArray.asSequence():
Sequence<Byte> {\n    if (isEmpty()) return emptySequence()\n    return Sequence { this.iterator() }\n}\n\n/**\n *

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Creates a [Sequence] instance that wraps the original array returning its elements when being iterated.\n * \n *
@sample samples.collections.Sequences.Building.sequenceFromArray\n *^\npublic fun ShortArray.asSequence():
Sequence<Short> {\n  if (isEmpty()) return emptySequence()\n  return Sequence { this.iterator() }\n}\n\n/**\n *
Creates a [Sequence] instance that wraps the original array returning its elements when being iterated.\n * \n *
@sample samples.collections.Sequences.Building.sequenceFromArray\n *^\npublic fun IntArray.asSequence():
Sequence<Int> {\n  if (isEmpty()) return emptySequence()\n  return Sequence { this.iterator() }\n}\n\n/**\n *
Creates a [Sequence] instance that wraps the original array returning its elements when being iterated.\n * \n *
@sample samples.collections.Sequences.Building.sequenceFromArray\n *^\npublic fun LongArray.asSequence():
Sequence<Long> {\n  if (isEmpty()) return emptySequence()\n  return Sequence { this.iterator() }\n}\n\n/**\n *
Creates a [Sequence] instance that wraps the original array returning its elements when being iterated.\n * \n *
@sample samples.collections.Sequences.Building.sequenceFromArray\n *^\npublic fun FloatArray.asSequence():
Sequence<Float> {\n  if (isEmpty()) return emptySequence()\n  return Sequence { this.iterator() }\n}\n\n/**\n *
Creates a [Sequence] instance that wraps the original array returning its elements when being iterated.\n * \n *
@sample samples.collections.Sequences.Building.sequenceFromArray\n *^\npublic fun DoubleArray.asSequence():
Sequence<Double> {\n  if (isEmpty()) return emptySequence()\n  return Sequence { this.iterator() }\n}\n\n/**\n *
Creates a [Sequence] instance that wraps the original array returning its elements when being iterated.\n * \n *
@sample samples.collections.Sequences.Building.sequenceFromArray\n *^\npublic fun
BooleanArray.asSequence(): Sequence<Boolean> {\n  if (isEmpty()) return emptySequence()\n  return Sequence
{ this.iterator() }\n}\n\n/**\n * Creates a [Sequence] instance that wraps the original array returning its elements
when being iterated.\n * \n * @sample samples.collections.Sequences.Building.sequenceFromArray\n *^\npublic
fun CharArray.asSequence(): Sequence<Char> {\n  if (isEmpty()) return emptySequence()\n  return Sequence {
this.iterator() }\n}\n\n/**\n * Returns an average value of elements in the array.\n
*\n@kotlin.jvm.JvmName("averageOfByte")\npublic fun Array<out Byte>.average(): Double {\n  var sum:
Double = 0.0\n  var count: Int = 0\n  for (element in this) {\n    sum += element\n    ++count\n  }\n  return
if (count == 0) Double.NaN else sum / count\n}\n\n/**\n * Returns an average value of elements in the array.\n
*\n@kotlin.jvm.JvmName("averageOfShort")\npublic fun Array<out Short>.average(): Double {\n  var sum:
Double = 0.0\n  var count: Int = 0\n  for (element in this) {\n    sum += element\n    ++count\n  }\n  return
if (count == 0) Double.NaN else sum / count\n}\n\n/**\n * Returns an average value of elements in the array.\n
*\n@kotlin.jvm.JvmName("averageOfInt")\npublic fun Array<out Int>.average(): Double {\n  var sum: Double
= 0.0\n  var count: Int = 0\n  for (element in this) {\n    sum += element\n    ++count\n  }\n  return if (count
== 0) Double.NaN else sum / count\n}\n\n/**\n * Returns an average value of elements in the array.\n
*\n@kotlin.jvm.JvmName("averageOfLong")\npublic fun Array<out Long>.average(): Double {\n  var sum:
Double = 0.0\n  var count: Int = 0\n  for (element in this) {\n    sum += element\n    ++count\n  }\n  return
if (count == 0) Double.NaN else sum / count\n}\n\n/**\n * Returns an average value of elements in the array.\n
*\n@kotlin.jvm.JvmName("averageOfFloat")\npublic fun Array<out Float>.average(): Double {\n  var sum:
Double = 0.0\n  var count: Int = 0\n  for (element in this) {\n    sum += element\n    ++count\n  }\n  return
if (count == 0) Double.NaN else sum / count\n}\n\n/**\n * Returns an average value of elements in the array.\n
*\n@kotlin.jvm.JvmName("averageOfDouble")\npublic fun Array<out Double>.average(): Double {\n  var sum:
Double = 0.0\n  var count: Int = 0\n  for (element in this) {\n    sum += element\n    ++count\n  }\n  return
if (count == 0) Double.NaN else sum / count\n}\n\n/**\n * Returns an average value of elements in the array.\n
*\npublic fun ByteArray.average(): Double {\n  var sum: Double = 0.0\n  var count: Int = 0\n  for (element in
this) {\n    sum += element\n    ++count\n  }\n  return if (count == 0) Double.NaN else sum /
count\n}\n\n/**\n * Returns an average value of elements in the array.\n *\npublic fun ShortArray.average():
Double {\n  var sum: Double = 0.0\n  var count: Int = 0\n  for (element in this) {\n    sum += element\n
++count\n  }\n  return if (count == 0) Double.NaN else sum / count\n}\n\n/**\n * Returns an average value of
elements in the array.\n *\npublic fun IntArray.average(): Double {\n  var sum: Double = 0.0\n  var count: Int =
0\n  for (element in this) {\n    sum += element\n    ++count\n  }\n  return if (count == 0) Double.NaN else
sum / count\n}\n\n/**\n * Returns an average value of elements in the array.\n *\npublic fun LongArray.average():

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Double {
    var sum: Double = 0.0
    var count: Int = 0
    for (element in this) {
        sum += element
        ++count
    }
    return if (count == 0) Double.NaN else sum / count
}

Returns an average value of elements in the array.

public fun FloatArray.average(): Double {
    var sum: Double = 0.0
    var count: Int = 0
    for (element in this) {
        sum += element
        ++count
    }
    return if (count == 0) Double.NaN else sum / count
}

Returns an average value of elements in the array.

public fun DoubleArray.average(): Double {
    var sum: Double = 0.0
    var count: Int = 0
    for (element in this) {
        sum += element
        ++count
    }
    return if (count == 0) Double.NaN else sum / count
}

Returns the sum of all elements in the array.

@kotlin.jvm.JvmName("sumOfByte")
public fun Array<out Byte>.sum(): Int {
    var sum: Int = 0
    for (element in this) {
        sum += element
    }
    return sum
}

Returns the sum of all elements in the array.

@kotlin.jvm.JvmName("sumOfShort")
public fun Array<out Short>.sum(): Int {
    var sum: Int = 0
    for (element in this) {
        sum += element
    }
    return sum
}

Returns the sum of all elements in the array.

@kotlin.jvm.JvmName("sumOfInt")
public fun Array<out Int>.sum(): Int {
    var sum: Int = 0
    for (element in this) {
        sum += element
    }
    return sum
}

Returns the sum of all elements in the array.

@kotlin.jvm.JvmName("sumOfLong")
public fun Array<out Long>.sum(): Long {
    var sum: Long = 0L
    for (element in this) {
        sum += element
    }
    return sum
}

Returns the sum of all elements in the array.

@kotlin.jvm.JvmName("sumOfFloat")
public fun Array<out Float>.sum(): Float {
    var sum: Float = 0.0f
    for (element in this) {
        sum += element
    }
    return sum
}

Returns the sum of all elements in the array.

@kotlin.jvm.JvmName("sumOfDouble")
public fun Array<out Double>.sum(): Double {
    var sum: Double = 0.0
    for (element in this) {
        sum += element
    }
    return sum
}

Returns the sum of all elements in the array.

public fun ByteArray.sum(): Int {
    var sum: Int = 0
    for (element in this) {
        sum += element
    }
    return sum
}

Returns the sum of all elements in the array.

public fun ShortArray.sum(): Int {
    var sum: Int = 0
    for (element in this) {
        sum += element
    }
    return sum
}

Returns the sum of all elements in the array.

public fun IntArray.sum(): Int {
    var sum: Int = 0
    for (element in this) {
        sum += element
    }
    return sum
}

Returns the sum of all elements in the array.

public fun LongArray.sum(): Long {
    var sum: Long = 0L
    for (element in this) {
        sum += element
    }
    return sum
}

Returns the sum of all elements in the array.

public fun FloatArray.sum(): Float {
    var sum: Float = 0.0f
    for (element in this) {
        sum += element
    }
    return sum
}

Returns the sum of all elements in the array.

public fun DoubleArray.sum(): Double {
    var sum: Double = 0.0
    for (element in this) {
        sum += element
    }
    return sum
}

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@file:kotlin.jvm.JvmMultifileClass
@file:kotlin.jvm.JvmName("RangesKt")
package kotlin.ranges

NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt
See: https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib

import kotlin.random.*

Returns a random element from this range.
@throws IllegalArgumentException if this range is empty.

@SinceKotlin("1.3")
@kotlin.internal.InlineOnly
public inline fun IntRange.random(): Int {
    return random(Random)
}

Returns a random element from this range.
@throws IllegalArgumentException if this range is empty.

@SinceKotlin("1.3")
@kotlin.internal.InlineOnly
public inline fun LongRange.random(): Long {
    return random(Random)
}

Returns a random element from this range.
@throws IllegalArgumentException if this range is empty.

@SinceKotlin("1.3")
@kotlin.internal.InlineOnly
public inline fun CharRange.random(): Char {
    return random(Random)
}

Returns a random element from this range using the specified source of randomness.
@throws IllegalArgumentException if this range is empty.

@SinceKotlin("1.3")
public fun IntRange.random(random: Random): Int {
    try {
        return random.nextInt(this)
    } catch (e: IllegalArgumentException) {
        throw NoSuchElementException(e.message)
    }
}

Returns a random element from this range using the

```

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specified source of randomness.\n * \n * @throws IllegalArgumentException if this range is empty.\n
*\n@SinceKotlin("1.3")\npublic fun LongRange.random(random: Random): Long {\n try {\n return
random.nextLong(this)\n } catch(e: IllegalArgumentException) {\n throw
NoSuchElementException(e.message)\n }\n}\n\n/**\n * Returns a random element from this range using the
specified source of randomness.\n * \n * @throws IllegalArgumentException if this range is empty.\n
*\n@SinceKotlin("1.3")\npublic fun CharRange.random(random: Random): Char {\n try {\n return
random.nextInt(first.toInt(), last.toInt() + 1).toChar()\n } catch(e: IllegalArgumentException) {\n throw
NoSuchElementException(e.message)\n }\n}\n\n/**\n * Returns a random element from this range, or `null` if this
range is empty.\n *\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline
fun IntRange.randomOrNull(): Int? {\n return randomOrNull(Random)\n}\n}\n\n/**\n * Returns a random element
from this range, or `null` if this range is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
LongRange.randomOrNull(): Long? {\n return randomOrNull(Random)\n}\n}\n\n/**\n * Returns a random element
from this range using the specified source of randomness, or `null` if this range is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
CharRange.randomOrNull(): Char? {\n return randomOrNull(Random)\n}\n}\n\n/**\n * Returns a random element from
this range using the specified source of randomness, or `null` if this range is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun IntRange.randomOrNull(random: Random): Int?
{\n if (isEmpty())\n return null\n return random.nextInt(this)\n}\n}\n\n/**\n * Returns a random element from
this range using the specified source of randomness, or `null` if this range is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun LongRange.randomOrNull(random: Random):
Long? {\n if (isEmpty())\n return null\n return random.nextLong(this)\n}\n}\n\n/**\n * Returns a random
element from this range using the specified source of randomness, or `null` if this range is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun CharRange.randomOrNull(random: Random):
Char? {\n if (isEmpty())\n return null\n return random.nextInt(first.toInt(), last.toInt() +
1).toChar()\n}\n}\n\n/**\n * Returns `true` if this range contains the specified [element].\n * \n * Always returns `false`
if the [element] is `null`.\n *\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline operator fun
IntRange.contains(element: Int?): Boolean {\n return element != null && contains(element)\n}\n}\n\n/**\n * Returns
`true` if this range contains the specified [element].\n * \n * Always returns `false` if the [element] is `null`.\n
*\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline operator fun LongRange.contains(element:
Long?): Boolean {\n return element != null && contains(element)\n}\n}\n\n/**\n * Returns `true` if this range
contains the specified [element].\n * \n * Always returns `false` if the [element] is `null`.\n
*\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline operator fun CharRange.contains(element:
Char?): Boolean {\n return element != null && contains(element)\n}\n}\n\n/**\n * Checks if the specified [value]
belongs to this range.\n *\n@kotlin.jvm.JvmName("intRangeContains")\npublic operator fun
ClosedRange<Int>.contains(value: Byte): Boolean {\n return contains(value.toInt())\n}\n}\n\n/**\n * Checks if the
specified [value] belongs to this range.\n *\n@kotlin.jvm.JvmName("longRangeContains")\npublic operator fun
ClosedRange<Long>.contains(value: Byte): Boolean {\n return contains(value.toLong())\n}\n}\n\n/**\n * Checks if
the specified [value] belongs to this range.\n *\n@kotlin.jvm.JvmName("shortRangeContains")\npublic operator
fun ClosedRange<Short>.contains(value: Byte): Boolean {\n return contains(value.toShort())\n}\n}\n\n/**\n *
Checks if the specified [value] belongs to this range.\n *\n@Deprecated("This `contains` operation mixing integer
and floating point arguments has ambiguous semantics and is going to be
removed.")\n@kotlin.jvm.JvmName("doubleRangeContains")\npublic operator fun
ClosedRange<Double>.contains(value: Byte): Boolean {\n return contains(value.toDouble())\n}\n}\n\n/**\n * Checks if
the specified [value] belongs to this range.\n *\n@Deprecated("This `contains` operation mixing integer
and floating point arguments has ambiguous semantics and is going to be
removed.")\n@kotlin.jvm.JvmName("floatRangeContains")\npublic operator fun
ClosedRange<Float>.contains(value: Byte): Boolean {\n return contains(value.toFloat())\n}\n}\n\n/**\n * Checks if

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the specified [value] belongs to this range.

```

*\/n@Deprecated("This `contains` operation mixing integer and
floating point arguments has ambiguous semantics and is going to be
removed.")n@kotlin.jvm.JvmName("intRangeContains")npublic operator fun ClosedRange<Int>.contains(value:
Double): Boolean {n  return value.toIntExactOrNull().let { if (it != null) contains(it) else false }n}n/n/**n *
Checks if the specified [value] belongs to this range.n
*\/n@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics
and is going to be removed.")n@kotlin.jvm.JvmName("longRangeContains")npublic operator fun
ClosedRange<Long>.contains(value: Double): Boolean {n  return value.toLongExactOrNull().let { if (it != null)
contains(it) else false }n}n/n/**n * Checks if the specified [value] belongs to this range.n
*\/n@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics
and is going to be removed.")n@kotlin.jvm.JvmName("byteRangeContains")npublic operator fun
ClosedRange<Byte>.contains(value: Double): Boolean {n  return value.toByteExactOrNull().let { if (it != null)
contains(it) else false }n}n/n/**n * Checks if the specified [value] belongs to this range.n
*\/n@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics
and is going to be removed.")n@kotlin.jvm.JvmName("shortRangeContains")npublic operator fun
ClosedRange<Short>.contains(value: Double): Boolean {n  return value.toShortExactOrNull().let { if (it != null)
contains(it) else false }n}n/n/**n * Checks if the specified [value] belongs to this range.n
*\/n@kotlin.jvm.JvmName("floatRangeContains")npublic operator fun ClosedRange<Float>.contains(value:
Double): Boolean {n  return contains(value.toFloat())n}n/n/**n * Checks if the specified [value] belongs to this
range.n
*\/n@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous
semantics and is going to be removed.")n@kotlin.jvm.JvmName("intRangeContains")npublic operator fun
ClosedRange<Int>.contains(value: Float): Boolean {n  return value.toIntExactOrNull().let { if (it != null)
contains(it) else false }n}n/n/**n * Checks if the specified [value] belongs to this range.n
*\/n@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics
and is going to be removed.")n@kotlin.jvm.JvmName("longRangeContains")npublic operator fun
ClosedRange<Long>.contains(value: Float): Boolean {n  return value.toLongExactOrNull().let { if (it != null)
contains(it) else false }n}n/n/**n * Checks if the specified [value] belongs to this range.n
*\/n@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics
and is going to be removed.")n@kotlin.jvm.JvmName("byteRangeContains")npublic operator fun
ClosedRange<Byte>.contains(value: Float): Boolean {n  return value.toByteExactOrNull().let { if (it != null)
contains(it) else false }n}n/n/**n * Checks if the specified [value] belongs to this range.n
*\/n@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics
and is going to be removed.")n@kotlin.jvm.JvmName("shortRangeContains")npublic operator fun
ClosedRange<Short>.contains(value: Float): Boolean {n  return value.toShortExactOrNull().let { if (it != null)
contains(it) else false }n}n/n/**n * Checks if the specified [value] belongs to this range.n
*\/n@kotlin.jvm.JvmName("doubleRangeContains")npublic operator fun ClosedRange<Double>.contains(value:
Float): Boolean {n  return contains(value.toDouble())n}n/n/**n * Checks if the specified [value] belongs to this
range.n
*\/n@kotlin.jvm.JvmName("longRangeContains")npublic operator fun
ClosedRange<Long>.contains(value: Int): Boolean {n  return contains(value.toLong())n}n/n/**n * Checks if the
specified [value] belongs to this range.n
*\/n@kotlin.jvm.JvmName("byteRangeContains")npublic operator fun
ClosedRange<Byte>.contains(value: Int): Boolean {n  return value.toByteExactOrNull().let { if (it != null)
contains(it) else false }n}n/n/**n * Checks if the specified [value] belongs to this range.n
*\/n@kotlin.jvm.JvmName("shortRangeContains")npublic operator fun ClosedRange<Short>.contains(value: Int):
Boolean {n  return value.toShortExactOrNull().let { if (it != null) contains(it) else false }n}n/n/**n * Checks if
the specified [value] belongs to this range.n
*\/n@Deprecated("This `contains` operation mixing integer and
floating point arguments has ambiguous semantics and is going to be
removed.")n@kotlin.jvm.JvmName("doubleRangeContains")npublic operator fun
ClosedRange<Double>.contains(value: Int): Boolean {n  return contains(value.toDouble())n}n/n/**n * Checks

```

if the specified [value] belongs to this range.\n \*/\n@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics and is going to be removed.")\n@kotlin.jvm.JvmName("floatRangeContains")\npublic operator fun ClosedRange<Float>.contains(value: Int): Boolean {\n return contains(value.toFloat())\n}\n\n\*\*\n \* Checks if the specified [value] belongs to this range.\n \*/\n@kotlin.jvm.JvmName("intRangeContains")\npublic operator fun ClosedRange<Int>.contains(value: Long): Boolean {\n return value.toIntExactOrNull().let { if (it != null) contains(it) else false }\n}\n\n\*\*\n \* Checks if the specified [value] belongs to this range.\n \*/\n@kotlin.jvm.JvmName("byteRangeContains")\npublic operator fun ClosedRange<Byte>.contains(value: Long): Boolean {\n return value.toByteExactOrNull().let { if (it != null) contains(it) else false }\n}\n\n\*\*\n \* Checks if the specified [value] belongs to this range.\n \*/\n@kotlin.jvm.JvmName("shortRangeContains")\npublic operator fun ClosedRange<Short>.contains(value: Long): Boolean {\n return value.toShortExactOrNull().let { if (it != null) contains(it) else false }\n}\n\n\*\*\n \* Checks if the specified [value] belongs to this range.\n \*/\n@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics and is going to be removed.")\n@kotlin.jvm.JvmName("doubleRangeContains")\npublic operator fun ClosedRange<Double>.contains(value: Long): Boolean {\n return contains(value.toDouble())\n}\n\n\*\*\n \* Checks if the specified [value] belongs to this range.\n \*/\n@kotlin.jvm.JvmName("floatRangeContains")\npublic operator fun ClosedRange<Float>.contains(value: Long): Boolean {\n return contains(value.toFloat())\n}\n\n\*\*\n \* Checks if the specified [value] belongs to this range.\n \*/\n@kotlin.jvm.JvmName("intRangeContains")\npublic operator fun ClosedRange<Int>.contains(value: Short): Boolean {\n return contains(value.toInt())\n}\n\n\*\*\n \* Checks if the specified [value] belongs to this range.\n \*/\n@kotlin.jvm.JvmName("longRangeContains")\npublic operator fun ClosedRange<Long>.contains(value: Short): Boolean {\n return contains(value.toLong())\n}\n\n\*\*\n \* Checks if the specified [value] belongs to this range.\n \*/\n@kotlin.jvm.JvmName("byteRangeContains")\npublic operator fun ClosedRange<Byte>.contains(value: Short): Boolean {\n return value.toByteExactOrNull().let { if (it != null) contains(it) else false }\n}\n\n\*\*\n \* Checks if the specified [value] belongs to this range.\n \*/\n@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics and is going to be removed.")\n@kotlin.jvm.JvmName("doubleRangeContains")\npublic operator fun ClosedRange<Double>.contains(value: Short): Boolean {\n return contains(value.toDouble())\n}\n\n\*\*\n \* Checks if the specified [value] belongs to this range.\n \*/\n@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics and is going to be removed.")\n@kotlin.jvm.JvmName("floatRangeContains")\npublic operator fun ClosedRange<Float>.contains(value: Short): Boolean {\n return contains(value.toFloat())\n}\n\n\*\*\n \* Returns a progression from this value down to the specified [to] value with the step -1.\n \* \n \* The [to] value should be less than or equal to `this` value.\n \* If the [to] value is greater than `this` value the returned progression is empty.\n \*/\npublic infix fun Int.downTo(to: Byte): IntProgression {\n return IntProgression.fromClosedRange(this, to.toInt(), -1)\n}\n\n\*\*\n \* Returns a progression from this value down to the specified [to] value with the step -1.\n \* \n \* The [to] value should be less than or equal to `this` value.\n \* If the [to] value is greater than `this` value the returned progression is empty.\n \*/\npublic infix fun Long.downTo(to: Byte): LongProgression {\n return LongProgression.fromClosedRange(this, to.toLong(), -1L)\n}\n\n\*\*\n \* Returns a progression from this value down to the specified [to] value with the step -1.\n \* \n \* The [to] value should be less than or equal to `this` value.\n \* If the [to] value is greater than `this` value the returned progression is empty.\n \*/\npublic infix fun Byte.downTo(to: Byte): IntProgression {\n return IntProgression.fromClosedRange(this.toInt(), to.toInt(), -1)\n}\n\n\*\*\n \* Returns a progression from this value down to the specified [to] value with the step -1.\n \* \n \* The [to] value should be less than or equal to `this` value.\n \* If the [to] value is greater than `this` value the returned progression is empty.\n \*/\npublic infix fun Short.downTo(to: Byte): IntProgression {\n return IntProgression.fromClosedRange(this.toInt(), to.toInt(), -1)\n}\n\n\*\*\n \* Returns a progression from this value down to the specified [to] value with the step -1.\n \* \n \* The [to] value should be less than or equal to `this` value.\n

```

* If the [to] value is greater than `this` value the returned progression is empty.\n */\npublic infix fun
Char.downTo(to: Char): CharProgression {\n    return CharProgression.fromClosedRange(this, to, -1)\n}\n\n/>\n */
Returns a progression from this value down to the specified [to] value with the step -1.\n */\n */ The [to] value should
be less than or equal to `this` value.\n */ If the [to] value is greater than `this` value the returned progression is
empty.\n */\npublic infix fun Int.downTo(to: Int): IntProgression {\n    return IntProgression.fromClosedRange(this,
to, -1)\n}\n\n/>\n */ Returns a progression from this value down to the specified [to] value with the step -1.\n */\n */
The [to] value should be less than or equal to `this` value.\n */ If the [to] value is greater than `this` value the
returned progression is empty.\n */\npublic infix fun Long.downTo(to: Int): LongProgression {\n    return
LongProgression.fromClosedRange(this, to.toLong(), -1L)\n}\n\n/>\n */ Returns a progression from this value
down to the specified [to] value with the step -1.\n */\n */ The [to] value should be less than or equal to `this` value.\n
*/ If the [to] value is greater than `this` value the returned progression is empty.\n */\npublic infix fun
Byte.downTo(to: Int): IntProgression {\n    return IntProgression.fromClosedRange(this.toInt(), to, -1)\n}\n\n/>\n */
Returns a progression from this value down to the specified [to] value with the step -1.\n */\n */ The [to] value should
be less than or equal to `this` value.\n */ If the [to] value is greater than `this` value the returned progression is
empty.\n */\npublic infix fun Short.downTo(to: Int): IntProgression {\n    return
IntProgression.fromClosedRange(this.toInt(), to, -1)\n}\n\n/>\n */ Returns a progression from this value down to the
specified [to] value with the step -1.\n */\n */ The [to] value should be less than or equal to `this` value.\n */ If the [to]
value is greater than `this` value the returned progression is empty.\n */\npublic infix fun Int.downTo(to: Long):
LongProgression {\n    return LongProgression.fromClosedRange(this.toLong(), to, -1L)\n}\n\n/>\n */ Returns a
progression from this value down to the specified [to] value with the step -1.\n */\n */ The [to] value should be less
than or equal to `this` value.\n */ If the [to] value is greater than `this` value the returned progression is empty.\n
*/\npublic infix fun Long.downTo(to: Long): LongProgression {\n    return LongProgression.fromClosedRange(this,
to, -1L)\n}\n\n/>\n */ Returns a progression from this value down to the specified [to] value with the step -1.\n */\n
*/ The [to] value should be less than or equal to `this` value.\n */ If the [to] value is greater than `this` value the
returned progression is empty.\n */\npublic infix fun Byte.downTo(to: Long): LongProgression {\n    return
LongProgression.fromClosedRange(this.toLong(), to, -1L)\n}\n\n/>\n */ Returns a progression from this value
down to the specified [to] value with the step -1.\n */\n */ The [to] value should be less than or equal to `this` value.\n
*/ If the [to] value is greater than `this` value the returned progression is empty.\n */\npublic infix fun
Short.downTo(to: Long): LongProgression {\n    return LongProgression.fromClosedRange(this.toLong(), to, -
1L)\n}\n\n/>\n */ Returns a progression from this value down to the specified [to] value with the step -1.\n */\n */
The [to] value should be less than or equal to `this` value.\n */ If the [to] value is greater than `this` value the
returned progression is empty.\n */\npublic infix fun Int.downTo(to: Short): IntProgression {\n    return
IntProgression.fromClosedRange(this, to.toInt(), -1)\n}\n\n/>\n */ Returns a progression from this value down to the
specified [to] value with the step -1.\n */\n */ The [to] value should be less than or equal to `this` value.\n */ If the [to]
value is greater than `this` value the returned progression is empty.\n */\npublic infix fun Long.downTo(to: Short):
LongProgression {\n    return LongProgression.fromClosedRange(this, to.toLong(), -1L)\n}\n\n/>\n */ Returns a
progression from this value down to the specified [to] value with the step -1.\n */\n */ The [to] value should be less
than or equal to `this` value.\n */ If the [to] value is greater than `this` value the returned progression is empty.\n
*/\npublic infix fun Byte.downTo(to: Short): IntProgression {\n    return
IntProgression.fromClosedRange(this.toInt(), to.toInt(), -1)\n}\n\n/>\n */ Returns a progression from this value
down to the specified [to] value with the step -1.\n */\n */ The [to] value should be less than or equal to `this` value.\n
*/ If the [to] value is greater than `this` value the returned progression is empty.\n */\npublic infix fun
Short.downTo(to: Short): IntProgression {\n    return IntProgression.fromClosedRange(this.toInt(), to.toInt(), -
1)\n}\n\n/>\n */ Returns a progression that goes over the same range in the opposite direction with the same step.\n
*/\npublic fun IntProgression.reversed(): IntProgression {\n    return IntProgression.fromClosedRange(last, first, -
step)\n}\n\n/>\n */ Returns a progression that goes over the same range in the opposite direction with the same
step.\n */\npublic fun LongProgression.reversed(): LongProgression {\n    return
LongProgression.fromClosedRange(last, first, -step)\n}\n\n/>\n */ Returns a progression that goes over the same

```

```

range in the opposite direction with the same step.\n */\npublic fun CharProgression.reversed(): CharProgression {\n
    return CharProgression.fromClosedRange(last, first, -step)\n}\n\n/**\n * Returns a progression that goes over the
same range with the given step.\n */\npublic infix fun IntProgression.step(step: Int): IntProgression {\n
    checkStepIsPositive(step > 0, step)\n    return IntProgression.fromClosedRange(first, last, if (this.step > 0) step else -
step)\n}\n\n/**\n * Returns a progression that goes over the same range with the given step.\n */\npublic infix fun
LongProgression.step(step: Long): LongProgression {\n    checkStepIsPositive(step > 0, step)\n    return
LongProgression.fromClosedRange(first, last, if (this.step > 0) step else -step)\n}\n\n/**\n * Returns a progression
that goes over the same range with the given step.\n */\npublic infix fun CharProgression.step(step: Int):
CharProgression {\n    checkStepIsPositive(step > 0, step)\n    return CharProgression.fromClosedRange(first, last, if
(this.step > 0) step else -step)\n}\n\ninternal fun Int.toByteArrayOrNull(): Byte? {\n    return if (this in
Byte.MIN_VALUE.toInt()..Byte.MAX_VALUE.toInt()) this.toByteArray() else null\n}\n\ninternal fun
Long.toByteArrayOrNull(): Byte? {\n    return if (this in
Byte.MIN_VALUE.toLong()..Byte.MAX_VALUE.toLong()) this.toByteArray() else null\n}\n\ninternal fun
Short.toByteArrayOrNull(): Byte? {\n    return if (this in
Byte.MIN_VALUE.toShort()..Byte.MAX_VALUE.toShort()) this.toByteArray() else null\n}\n\ninternal fun
Double.toByteArrayOrNull(): Byte? {\n    return if (this in
Byte.MIN_VALUE.toDouble()..Byte.MAX_VALUE.toDouble()) this.toByteArray() else null\n}\n\ninternal fun
Float.toByteArrayOrNull(): Byte? {\n    return if (this in
Byte.MIN_VALUE.toFloat()..Byte.MAX_VALUE.toFloat()) this.toByteArray() else null\n}\n\ninternal fun
Long.toIntExactOrNull(): Int? {\n    return if (this in Int.MIN_VALUE.toLong()..Int.MAX_VALUE.toLong())
this.toInt() else null\n}\n\ninternal fun Double.toIntExactOrNull(): Int? {\n    return if (this in
Int.MIN_VALUE.toDouble()..Int.MAX_VALUE.toDouble()) this.toInt() else null\n}\n\ninternal fun
Float.toIntExactOrNull(): Int? {\n    return if (this in Int.MIN_VALUE.toFloat()..Int.MAX_VALUE.toFloat())
this.toInt() else null\n}\n\ninternal fun Double.toLongExactOrNull(): Long? {\n    return if (this in
Long.MIN_VALUE.toDouble()..Long.MAX_VALUE.toDouble()) this.toLong() else null\n}\n\ninternal fun
Float.toLongExactOrNull(): Long? {\n    return if (this in
Long.MIN_VALUE.toFloat()..Long.MAX_VALUE.toFloat()) this.toLong() else null\n}\n\ninternal fun
Int.toShortExactOrNull(): Short? {\n    return if (this in Short.MIN_VALUE.toInt()..Short.MAX_VALUE.toInt())
this.toShort() else null\n}\n\ninternal fun Long.toShortExactOrNull(): Short? {\n    return if (this in
Short.MIN_VALUE.toLong()..Short.MAX_VALUE.toLong()) this.toShort() else null\n}\n\ninternal fun
Double.toShortExactOrNull(): Short? {\n    return if (this in
Short.MIN_VALUE.toDouble()..Short.MAX_VALUE.toDouble()) this.toShort() else null\n}\n\ninternal fun
Float.toShortExactOrNull(): Short? {\n    return if (this in
Short.MIN_VALUE.toFloat()..Short.MAX_VALUE.toFloat()) this.toShort() else null\n}\n\n/**\n * Returns a range
from this value up to but excluding the specified [to] value.\n * \n * If the [to] value is less than or equal to `this`
value, then the returned range is empty.\n */\npublic infix fun Int.until(to: Byte): IntRange {\n    return this ..
(to.toInt() - 1).toInt()\n}\n\n/**\n * Returns a range from this value up to but excluding the specified [to] value.\n *
\n * If the [to] value is less than or equal to `this` value, then the returned range is empty.\n */\npublic infix fun
Long.until(to: Byte): LongRange {\n    return this .. (to.toLong() - 1).toLong()\n}\n\n/**\n * Returns a range from
this value up to but excluding the specified [to] value.\n * \n * If the [to] value is less than or equal to `this`
value, then the returned range is empty.\n */\npublic infix fun Byte.until(to: Byte): IntRange {\n    return this.toInt() ..
(to.toInt() - 1).toInt()\n}\n\n/**\n * Returns a range from this value up to but excluding the specified [to] value.\n *
\n * If the [to] value is less than or equal to `this` value, then the returned range is empty.\n */\npublic infix fun
Short.until(to: Byte): IntRange {\n    return this.toInt() .. (to.toInt() - 1).toInt()\n}\n\n/**\n * Returns a range from
this value up to but excluding the specified [to] value.\n * \n * If the [to] value is less than or equal to `this`
value, then the returned range is empty.\n */\npublic infix fun Char.until(to: Char): CharRange {\n    if (to <= "\u0000")
return CharRange.EMPTY\n    return this .. (to - 1).toChar()\n}\n\n/**\n * Returns a range from this value up to but
excluding the specified [to] value.\n * \n * If the [to] value is less than or equal to `this` value, then the returned

```

range is empty.

```

public infix fun Int.until(to: Int): IntRange {
    if (to <= Int.MIN_VALUE) return IntRange.EMPTY
    return this .. (to - 1).toInt()
}

```

\* Returns a range from this value up to but excluding the specified [to] value. \* If the [to] value is less than or equal to `this` value, then the returned range is empty.

```

public infix fun Long.until(to: Int): LongRange {
    return this .. (to.toLong() - 1).toLong()
}

```

\* Returns a range from this value up to but excluding the specified [to] value. \* If the [to] value is less than or equal to `this` value, then the returned range is empty.

```

public infix fun Byte.until(to: Int): IntRange {
    if (to <= Int.MIN_VALUE) return IntRange.EMPTY
    return this.toInt() .. (to - 1).toInt()
}

```

\* Returns a range from this value up to but excluding the specified [to] value. \* If the [to] value is less than or equal to `this` value, then the returned range is empty.

```

public infix fun Short.until(to: Int): IntRange {
    if (to <= Int.MIN_VALUE) return IntRange.EMPTY
    return this.toInt() .. (to - 1).toInt()
}

```

\* Returns a range from this value up to but excluding the specified [to] value. \* If the [to] value is less than or equal to `this` value, then the returned range is empty.

```

public infix fun Int.until(to: Long): LongRange {
    if (to <= Long.MIN_VALUE) return LongRange.EMPTY
    return this.toLong() .. (to - 1).toLong()
}

```

\* Returns a range from this value up to but excluding the specified [to] value. \* If the [to] value is less than or equal to `this` value, then the returned range is empty.

```

public infix fun Long.until(to: Long): LongRange {
    if (to <= Long.MIN_VALUE) return LongRange.EMPTY
    return this .. (to - 1).toLong()
}

```

\* Returns a range from this value up to but excluding the specified [to] value. \* If the [to] value is less than or equal to `this` value, then the returned range is empty.

```

public infix fun Byte.until(to: Long): LongRange {
    if (to <= Long.MIN_VALUE) return LongRange.EMPTY
    return this.toLong() .. (to - 1).toLong()
}

```

\* Returns a range from this value up to but excluding the specified [to] value. \* If the [to] value is less than or equal to `this` value, then the returned range is empty.

```

public infix fun Short.until(to: Long): LongRange {
    if (to <= Long.MIN_VALUE) return LongRange.EMPTY
    return this.toLong() .. (to - 1).toLong()
}

```

\* Returns a range from this value up to but excluding the specified [to] value. \* If the [to] value is less than or equal to `this` value, then the returned range is empty.

```

public infix fun Int.until(to: Short): IntRange {
    return this .. (to.toInt() - 1).toInt()
}

```

\* Returns a range from this value up to but excluding the specified [to] value. \* If the [to] value is less than or equal to `this` value, then the returned range is empty.

```

public infix fun Long.until(to: Short): LongRange {
    return this .. (to.toLong() - 1).toLong()
}

```

\* Returns a range from this value up to but excluding the specified [to] value. \* If the [to] value is less than or equal to `this` value, then the returned range is empty.

```

public infix fun Byte.until(to: Short): IntRange {
    return this.toInt() .. (to.toInt() - 1).toInt()
}

```

\* Ensures that this value is not less than the specified [minimumValue]. \* @return this value if it's greater than or equal to the [minimumValue] or the [minimumValue] otherwise. \* @sample samples.comparisons.ComparableOps.coerceAtLeast

```

T.coerceAtLeast(minimumValue: T): T {
    return if (this < minimumValue) minimumValue else this
}

```

\* Ensures that this value is not less than the specified [minimumValue]. \* @return this value if it's greater than or equal to the [minimumValue] or the [minimumValue] otherwise. \* @sample samples.comparisons.ComparableOps.coerceAtLeast

```

Byte.coerceAtLeast(minimumValue: Byte): Byte {
    return if (this < minimumValue) minimumValue else this
}

```

\* Ensures that this value is not less than the specified [minimumValue]. \* @return this value if it's greater than or equal to the [minimumValue] or the [minimumValue] otherwise. \* @sample samples.comparisons.ComparableOps.coerceAtLeast

```

Short.coerceAtLeast(minimumValue: Short): Short {
    return if (this < minimumValue) minimumValue else this
}

```

\* Ensures that this value is not less than the specified [minimumValue]. \* @return this value if it's greater than or equal to the [minimumValue] or the [minimumValue] otherwise. \* @sample samples.comparisons.ComparableOps.coerceAtLeast

```

Int.coerceAtLeast(minimumValue: Int): Int {
    return if (this < minimumValue) minimumValue else this
}

```

\* Ensures that this value is not less than the specified [minimumValue]. \* @return this value if it's greater than or equal to the



```

[minimumValue] or the [minimumValue] otherwise.\n * \n * @sample
samples.comparisons.ComparableOps.coerceAtLeast\n * \n\npublic fun Long.coerceAtLeast(minimumValue: Long):
Long {\n    return if (this < minimumValue) minimumValue else this\n}\n\n/**\n * Ensures that this value is not less
than the specified [minimumValue].\n * \n * @return this value if it's greater than or equal to the [minimumValue]
or the [minimumValue] otherwise.\n * \n * @sample samples.comparisons.ComparableOps.coerceAtLeast\n
*\n\npublic fun Float.coerceAtLeast(minimumValue: Float): Float {\n    return if (this < minimumValue)
minimumValue else this\n}\n\n/**\n * Ensures that this value is not less than the specified [minimumValue].\n * \n
* @return this value if it's greater than or equal to the [minimumValue] or the [minimumValue] otherwise.\n * \n
* @sample samples.comparisons.ComparableOps.coerceAtLeast\n *\n\npublic fun
Double.coerceAtLeast(minimumValue: Double): Double {\n    return if (this < minimumValue) minimumValue else
this\n}\n\n/**\n * Ensures that this value is not greater than the specified [maximumValue].\n * \n * @return this
value if it's less than or equal to the [maximumValue] or the [maximumValue] otherwise.\n * \n * @sample
samples.comparisons.ComparableOps.coerceAtMostComparable\n *\n\npublic fun <T : Comparable<T>>
T.coerceAtMost(maximumValue: T): T {\n    return if (this > maximumValue) maximumValue else this\n}\n\n/**\n
* Ensures that this value is not greater than the specified [maximumValue].\n * \n * @return this value if it's less
than or equal to the [maximumValue] or the [maximumValue] otherwise.\n * \n * @sample
samples.comparisons.ComparableOps.coerceAtMost\n *\n\npublic fun Byte.coerceAtMost(maximumValue: Byte):
Byte {\n    return if (this > maximumValue) maximumValue else this\n}\n\n/**\n * Ensures that this value is not
greater than the specified [maximumValue].\n * \n * @return this value if it's less than or equal to the
[maximumValue] or the [maximumValue] otherwise.\n * \n * @sample
samples.comparisons.ComparableOps.coerceAtMost\n *\n\npublic fun Short.coerceAtMost(maximumValue: Short):
Short {\n    return if (this > maximumValue) maximumValue else this\n}\n\n/**\n * Ensures that this value is not
greater than the specified [maximumValue].\n * \n * @return this value if it's less than or equal to the
[maximumValue] or the [maximumValue] otherwise.\n * \n * @sample
samples.comparisons.ComparableOps.coerceAtMost\n *\n\npublic fun Int.coerceAtMost(maximumValue: Int): Int
{\n    return if (this > maximumValue) maximumValue else this\n}\n\n/**\n * Ensures that this value is not greater
than the specified [maximumValue].\n * \n * @return this value if it's less than or equal to the [maximumValue] or
the [maximumValue] otherwise.\n * \n * @sample samples.comparisons.ComparableOps.coerceAtMost\n
*\n\npublic fun Long.coerceAtMost(maximumValue: Long): Long {\n    return if (this > maximumValue)
maximumValue else this\n}\n\n/**\n * Ensures that this value is not greater than the specified [maximumValue].\n *
\n * @return this value if it's less than or equal to the [maximumValue] or the [maximumValue] otherwise.\n * \n
* @sample samples.comparisons.ComparableOps.coerceAtMost\n *\n\npublic fun
Float.coerceAtMost(maximumValue: Float): Float {\n    return if (this > maximumValue) maximumValue else
this\n}\n\n/**\n * Ensures that this value is not greater than the specified [maximumValue].\n * \n * @return this
value if it's less than or equal to the [maximumValue] or the [maximumValue] otherwise.\n * \n * @sample
samples.comparisons.ComparableOps.coerceAtMost\n *\n\npublic fun Double.coerceAtMost(maximumValue:
Double): Double {\n    return if (this > maximumValue) maximumValue else this\n}\n\n/**\n * Ensures that this
value lies in the specified range [minimumValue]..[maximumValue].\n * \n * @return this value if it's in the range,
or [minimumValue] if this value is less than [minimumValue], or [maximumValue] if this value is greater than
[maximumValue].\n * \n * @sample samples.comparisons.ComparableOps.coerceInComparable\n *\n\npublic fun
<T : Comparable<T>> T.coerceIn(minimumValue: T?, maximumValue: T?): T {\n    if (minimumValue !== null
&& maximumValue !== null) {\n        if (minimumValue > maximumValue) throw
IllegalArgumentOutOfRangeException("Cannot coerce value to an empty range: maximum $maximumValue is less than
minimum $minimumValue.")\n        if (this < minimumValue) return minimumValue\n        if (this >
maximumValue) return maximumValue\n    }\n    else {\n        if (minimumValue !== null && this <
minimumValue) return minimumValue\n        if (maximumValue !== null && this > maximumValue) return
maximumValue\n    }\n    return this\n}\n\n/**\n * Ensures that this value lies in the specified range
[minimumValue]..[maximumValue].\n * \n * @return this value if it's in the range, or [minimumValue] if this value

```

```

is less than [minimumValue], or [maximumValue] if this value is greater than [maximumValue].\n * \n * @sample
samples.comparisons.ComparableOps.coerceIn\n * \n * \n public fun Byte.coerceIn(minimumValue: Byte,
maximumValue: Byte): Byte {\n     if (minimumValue > maximumValue) throw
IllegalArgumentException("Cannot coerce value to an empty range: maximum $maximumValue is less than
minimum $minimumValue.")\n     if (this < minimumValue) return minimumValue\n     if (this > maximumValue)
return maximumValue\n     return this\n}\n\n/**\n * Ensures that this value lies in the specified range
[minimumValue]..[maximumValue].\n * \n * @return this value if it's in the range, or [minimumValue] if this value
is less than [minimumValue], or [maximumValue] if this value is greater than [maximumValue].\n * \n * @sample
samples.comparisons.ComparableOps.coerceIn\n * \n * \n public fun Short.coerceIn(minimumValue: Short,
maximumValue: Short): Short {\n     if (minimumValue > maximumValue) throw
IllegalArgumentException("Cannot coerce value to an empty range: maximum $maximumValue is less than
minimum $minimumValue.")\n     if (this < minimumValue) return minimumValue\n     if (this > maximumValue)
return maximumValue\n     return this\n}\n\n/**\n * Ensures that this value lies in the specified range
[minimumValue]..[maximumValue].\n * \n * @return this value if it's in the range, or [minimumValue] if this value
is less than [minimumValue], or [maximumValue] if this value is greater than [maximumValue].\n * \n * @sample
samples.comparisons.ComparableOps.coerceIn\n * \n * \n public fun Int.coerceIn(minimumValue: Int, maximumValue:
Int): Int {\n     if (minimumValue > maximumValue) throw IllegalArgumentException("Cannot coerce value to an
empty range: maximum $maximumValue is less than minimum $minimumValue.")\n     if (this < minimumValue)
return minimumValue\n     if (this > maximumValue) return maximumValue\n     return this\n}\n\n/**\n * Ensures
that this value lies in the specified range [minimumValue]..[maximumValue].\n * \n * @return this value if it's in
the range, or [minimumValue] if this value is less than [minimumValue], or [maximumValue] if this value is greater
than [maximumValue].\n * \n * @sample samples.comparisons.ComparableOps.coerceIn\n * \n * \n public fun
Long.coerceIn(minimumValue: Long, maximumValue: Long): Long {\n     if (minimumValue > maximumValue)
throw IllegalArgumentException("Cannot coerce value to an empty range: maximum $maximumValue is less than
minimum $minimumValue.")\n     if (this < minimumValue) return minimumValue\n     if (this > maximumValue)
return maximumValue\n     return this\n}\n\n/**\n * Ensures that this value lies in the specified range
[minimumValue]..[maximumValue].\n * \n * @return this value if it's in the range, or [minimumValue] if this value
is less than [minimumValue], or [maximumValue] if this value is greater than [maximumValue].\n * \n * @sample
samples.comparisons.ComparableOps.coerceIn\n * \n * \n public fun Float.coerceIn(minimumValue: Float,
maximumValue: Float): Float {\n     if (minimumValue > maximumValue) throw
IllegalArgumentException("Cannot coerce value to an empty range: maximum $maximumValue is less than
minimum $minimumValue.")\n     if (this < minimumValue) return minimumValue\n     if (this > maximumValue)
return maximumValue\n     return this\n}\n\n/**\n * Ensures that this value lies in the specified range
[minimumValue]..[maximumValue].\n * \n * @return this value if it's in the range, or [minimumValue] if this value
is less than [minimumValue], or [maximumValue] if this value is greater than [maximumValue].\n * \n * @sample
samples.comparisons.ComparableOps.coerceIn\n * \n * \n public fun Double.coerceIn(minimumValue: Double,
maximumValue: Double): Double {\n     if (minimumValue > maximumValue) throw
IllegalArgumentException("Cannot coerce value to an empty range: maximum $maximumValue is less than
minimum $minimumValue.")\n     if (this < minimumValue) return minimumValue\n     if (this > maximumValue)
return maximumValue\n     return this\n}\n\n/**\n * Ensures that this value lies in the specified [range].\n * \n *
@return this value if it's in the [range], or `range.start` if this value is less than `range.start`, or `range.endInclusive`
if this value is greater than `range.endInclusive`.\n * \n * @sample
samples.comparisons.ComparableOps.coerceInFloatingPointRange\n * \n * \n @SinceKotlin("1.1")\n public fun <T :
Comparable<T>> T.coerceIn(range: ClosedFloatingPointRange<T>): T {\n     if (range.isEmpty()) throw
IllegalArgumentException("Cannot coerce value to an empty range: $range.")\n     return when {\n         // this <
start equiv to this <= start && !(this >= start)\n         range.lessThanOrEqualTo(this, range.start) &&
!range.lessThanOrEqualTo(range.start, this) -> range.start\n         // this > end equiv to this >= end && !(this <= end)\n
range.lessThanOrEqualTo(range.endInclusive, this) && !range.lessThanOrEqualTo(this, range.endInclusive) ->

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range.endInclusive\n    else -> this\n    }\n}\n\n/**\n * Ensures that this value lies in the specified [range].\n * \n * @return this value if it's in the [range], or `range.start` if this value is less than `range.start`, or `range.endInclusive` if this value is greater than `range.endInclusive`.\n * \n * @sample
samples.comparisons.ComparableOps.coerceInComparable\n *\npublic fun <T : Comparable<T>>
T.coerceIn(range: ClosedRange<T>): T {\n    if (range is ClosedFloatingPointRange) {\n        return
this.coerceIn<T>(range)\n    }\n    if (range.isEmpty()) throw IllegalArgumentException("Cannot coerce value to an
empty range: $range.")\n    return when {\n        this < range.start -> range.start\n        this > range.endInclusive ->
range.endInclusive\n        else -> this\n    }\n}\n\n/**\n * Ensures that this value lies in the specified [range].\n * \n * @return this value if it's in the [range], or `range.start` if this value is less than `range.start`, or `range.endInclusive` if this value is greater than `range.endInclusive`.\n * \n * @sample
samples.comparisons.ComparableOps.coerceIn\n *\npublic fun Int.coerceIn(range: ClosedRange<Int>): Int {\n    if (range is ClosedFloatingPointRange) {\n
return this.coerceIn<Int>(range)\n    }\n    if (range.isEmpty()) throw IllegalArgumentException("Cannot coerce
value to an empty range: $range.")\n    return when {\n        this < range.start -> range.start\n        this >
range.endInclusive -> range.endInclusive\n        else -> this\n    }\n}\n\n/**\n * Ensures that this value lies in the
specified [range].\n * \n * @return this value if it's in the [range], or `range.start` if this value is less than
`range.start`, or `range.endInclusive` if this value is greater than `range.endInclusive`.\n * \n * @sample
samples.comparisons.ComparableOps.coerceIn\n *\npublic fun Long.coerceIn(range: ClosedRange<Long>): Long
{\n    if (range is ClosedFloatingPointRange) {\n        return this.coerceIn<Long>(range)\n    }\n    if
(range.isEmpty()) throw IllegalArgumentException("Cannot coerce value to an empty range: $range.")\n    return
when {\n        this < range.start -> range.start\n        this > range.endInclusive -> range.endInclusive\n        else ->
this\n    }\n}\n\n"/**\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.\n *
Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*/\n\n// Auto-generated file. DO NOT EDIT!\n\npackage kotlin\n\nimport
kotlin.experimental.*\n\n@Suppress("NON_PUBLIC_PRIMARY_CONSTRUCTOR_OF_INLINE_CLASS")\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic inline class UByte @PublishedApi internal
constructor(@PublishedApi internal val data: Byte) : Comparable<UByte> {\n    companion object {\n        /**\n
* A constant holding the minimum value an instance of UByte can have.\n        *\n        public const val
MIN_VALUE: UByte = UByte(0)\n        /**\n        * A constant holding the maximum value an instance of
UByte can have.\n        *\n        public const val MAX_VALUE: UByte = UByte(-1)\n        /**\n        * The
number of bytes used to represent an instance of UByte in a binary form.\n        *\n        public const val
SIZE_BYTES: Int = 1\n        /**\n        * The number of bits used to represent an instance of UByte in a binary
form.\n        *\n        public const val SIZE_BITS: Int = 8\n    }\n\n    /**\n    * Compares this value with the
specified value for order.\n    * Returns zero if this value is equal to the specified other value, a negative number if
it's less than other,\n    * or a positive number if it's greater than other.\n    *\n    @kotlin.internal.InlineOnly\n
@Suppress("OVERRIDE_BY_INLINE")\n    public override inline operator fun compareTo(other: UByte): Int =
this.toInt().compareTo(other.toInt())\n\n    /**\n    * Compares this value with the specified value for order.\n    *
Returns zero if this value is equal to the specified other value, a negative number if it's less than other,\n    * or a
positive number if it's greater than other.\n    *\n    @kotlin.internal.InlineOnly\n    public inline operator fun
compareTo(other: UShort): Int = this.toInt().compareTo(other.toInt())\n\n    /**\n    * Compares this value with the
specified value for order.\n    * Returns zero if this value is equal to the specified other value, a negative number if
it's less than other,\n    * or a positive number if it's greater than other.\n    *\n    @kotlin.internal.InlineOnly\n
public inline operator fun compareTo(other: UInt): Int = this.toUInt().compareTo(other)\n\n    /**\n    * Compares
this value with the specified value for order.\n    * Returns zero if this value is equal to the specified other value, a
negative number if it's less than other,\n    * or a positive number if it's greater than other.\n    *\n    @kotlin.internal.InlineOnly\n    public inline operator fun compareTo(other: ULong): Int =
this.toULong().compareTo(other)\n\n    /**\n    * Adds the other value to this value.\n    *\n    @kotlin.internal.InlineOnly\n
public inline operator fun plus(other: UByte): UInt = this.toUInt().plus(other.toUInt())\n\n    /**\n    * Adds the other value
to this value.\n    *\n    @kotlin.internal.InlineOnly\n    public inline operator fun plus(other: UShort): UInt =

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this.toUInt().plus(other.toUInt())\n /** Adds the other value to this value. *\n @kotlin.internal.InlineOnly\n
public inline operator fun plus(other: UInt): UInt = this.toUInt().plus(other)\n /** Adds the other value to this
value. *\n @kotlin.internal.InlineOnly\n public inline operator fun plus(other: ULong): ULong =
this.toULong().plus(other)\n\n /** Subtracts the other value from this value. *\n @kotlin.internal.InlineOnly\n
public inline operator fun minus(other: UByte): UInt = this.toUInt().minus(other.toUInt())\n /** Subtracts the
other value from this value. *\n @kotlin.internal.InlineOnly\n public inline operator fun minus(other: UShort):
UInt = this.toUInt().minus(other.toUInt())\n /** Subtracts the other value from this value. *\n
@kotlin.internal.InlineOnly\n public inline operator fun minus(other: UInt): UInt = this.toUInt().minus(other)\n
/** Subtracts the other value from this value. *\n @kotlin.internal.InlineOnly\n public inline operator fun
minus(other: ULong): ULong = this.toULong().minus(other)\n\n /** Multiplies this value by the other value. *\n
@kotlin.internal.InlineOnly\n public inline operator fun times(other: UByte): UInt =
this.toUInt().times(other.toUInt())\n /** Multiplies this value by the other value. *\n
@kotlin.internal.InlineOnly\n public inline operator fun times(other: UShort): UInt =
this.toUInt().times(other.toUInt())\n /** Multiplies this value by the other value. *\n
@kotlin.internal.InlineOnly\n public inline operator fun times(other: UInt): UInt = this.toUInt().times(other)\n
/** Multiplies this value by the other value. *\n @kotlin.internal.InlineOnly\n public inline operator fun
times(other: ULong): ULong = this.toULong().times(other)\n\n /** Divides this value by the other value. *\n
@kotlin.internal.InlineOnly\n public inline operator fun div(other: UByte): UInt =
this.toUInt().div(other.toUInt())\n /** Divides this value by the other value. *\n @kotlin.internal.InlineOnly\n
public inline operator fun div(other: UShort): UInt = this.toUInt().div(other.toUInt())\n /** Divides this value by
the other value. *\n @kotlin.internal.InlineOnly\n public inline operator fun div(other: UInt): UInt =
this.toUInt().div(other)\n /** Divides this value by the other value. *\n @kotlin.internal.InlineOnly\n public
inline operator fun div(other: ULong): ULong = this.toULong().div(other)\n\n /** Calculates the remainder of
dividing this value by the other value. *\n @kotlin.internal.InlineOnly\n public inline operator fun rem(other:
UByte): UInt = this.toUInt().rem(other.toUInt())\n /** Calculates the remainder of dividing this value by the other
value. *\n @kotlin.internal.InlineOnly\n public inline operator fun rem(other: UShort): UInt =
this.toUInt().rem(other.toUInt())\n /** Calculates the remainder of dividing this value by the other value. *\n
@kotlin.internal.InlineOnly\n public inline operator fun rem(other: UInt): UInt = this.toUInt().rem(other)\n /**
Calculates the remainder of dividing this value by the other value. *\n @kotlin.internal.InlineOnly\n public
inline operator fun rem(other: ULong): ULong = this.toULong().rem(other)\n\n /** Increments this value. *\n
@kotlin.internal.InlineOnly\n public inline operator fun inc(): UByte = UByte(data.inc())\n /** Decrements this
value. *\n @kotlin.internal.InlineOnly\n public inline operator fun dec(): UByte = UByte(data.dec())\n\n /**
Creates a range from this value to the specified [other] value. *\n @kotlin.internal.InlineOnly\n public inline
operator fun rangeTo(other: UByte): UIntRange = UIntRange(this.toUInt(), other.toUInt())\n\n /** Performs a
bitwise AND operation between the two values. *\n @kotlin.internal.InlineOnly\n public inline infix fun
and(other: UByte): UByte = UByte(this.data and other.data)\n\n /** Performs a bitwise OR operation between the
two values. *\n @kotlin.internal.InlineOnly\n public inline infix fun or(other: UByte): UByte = UByte(this.data
or other.data)\n\n /** Performs a bitwise XOR operation between the two values. *\n
@kotlin.internal.InlineOnly\n public inline infix fun xor(other: UByte): UByte = UByte(this.data xor other.data)\n
/** Inverts the bits in this value. *\n @kotlin.internal.InlineOnly\n public inline fun inv(): UByte =
UByte(data.inv())\n\n /**\n * Converts this [UByte] value to [Byte].\n * If this value is less than or
equals to [Byte.MAX_VALUE], the resulting `Byte` value represents\n * the same numerical value as this
`UByte`. Otherwise the result is negative.\n * The resulting `Byte` value has the same binary representation
as this `UByte` value.\n *\n @kotlin.internal.InlineOnly\n public inline fun toByte(): Byte = data\n /**\n
* Converts this [UByte] value to [Short].\n * The resulting `Short` value represents the same numerical
value as this `UByte`.\n * The least significant 8 bits of the resulting `Short` value are the same as the bits
of this `UByte` value,\n * whereas the most significant 8 bits are filled with zeros.\n *\n
@kotlin.internal.InlineOnly\n public inline fun toShort(): Short = data.toShort() and 0xFF\n /**\n * Converts

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this [UByte] value to [Int].\n * The resulting `Int` value represents the same numerical value as this
`UByte`.\n * The least significant 8 bits of the resulting `Int` value are the same as the bits of this `UByte`
value,\n * whereas the most significant 24 bits are filled with zeros.\n */\n @kotlin.internal.InlineOnly\n
public inline fun toInt(): Int = data.toInt() and 0xFF\n /**\n * Converts this [UByte] value to [Long].\n *\n
* The resulting `Long` value represents the same numerical value as this `UByte`.\n * The least significant
8 bits of the resulting `Long` value are the same as the bits of this `UByte` value,\n * whereas the most significant
56 bits are filled with zeros.\n */\n @kotlin.internal.InlineOnly\n public inline fun toLong(): Long =
data.toLong() and 0xFF\n /** Returns this value. */\n @kotlin.internal.InlineOnly\n public inline fun
toUByte(): UByte = this\n /**\n * Converts this [UByte] value to [UShort].\n *\n
* The resulting `UShort`
value represents the same numerical value as this `UByte`.\n * The least significant 8 bits of the resulting
`UShort` value are the same as the bits of this `UByte` value,\n * whereas the most significant 8 bits are filled
with zeros.\n */\n @kotlin.internal.InlineOnly\n public inline fun toUShort(): UShort = UShort(data.toShort()
and 0xFF)\n /**\n * Converts this [UByte] value to [UInt].\n *\n
* The resulting `UInt` value represents
the same numerical value as this `UByte`.\n * The least significant 8 bits of the resulting `UInt` value are
the same as the bits of this `UByte` value,\n * whereas the most significant 24 bits are filled with zeros.\n
*/\n @kotlin.internal.InlineOnly\n public inline fun toUInt(): UInt = UInt(data.toInt() and 0xFF)\n /**\n
* Converts this [UByte] value to [ULong].\n *\n
* The resulting `ULong` value represents the same numerical
value as this `UByte`.\n * The least significant 8 bits of the resulting `ULong` value are the same as the bits
of this `UByte` value,\n * whereas the most significant 56 bits are filled with zeros.\n */\n
@kotlin.internal.InlineOnly\n public inline fun toULong(): ULong = ULong(data.toLong() and 0xFF)\n /**\n
* Converts this [UByte] value to [Float].\n *\n
* The resulting `Float` value represents the same numerical
value as this `UByte`.\n */\n @kotlin.internal.InlineOnly\n public inline fun toFloat(): Float =
this.toInt().toFloat()\n /**\n * Converts this [UByte] value to [Double].\n *\n
* The resulting `Double`
value represents the same numerical value as this `UByte`.\n */\n @kotlin.internal.InlineOnly\n public inline
fun toDouble(): Double = this.toInt().toDouble()\n public override fun toString(): String =
toInt().toString()\n}\n\n/**\n * Converts this [Byte] value to [UByte].\n *\n
* If this value is positive, the resulting
`UByte` value represents the same numerical value as this `Byte`.\n * The resulting `UByte` value has the same
binary representation as this `Byte` value.\n
*/\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun
Byte.toUByte(): UByte = UByte(this)\n /**\n * Converts this [Short] value to [UByte].\n *\n
* If this value is
positive and less than or equals to [UByte.MAX_VALUE], the resulting `UByte` value represents\n * the same
numerical value as this `Short`.\n * The resulting `UByte` value is represented by the least significant 8 bits of
this `Short` value.\n
*/\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun
Short.toUByte(): UByte = UByte(this.toByte())\n /**\n * Converts this [Int] value to [UByte].\n *\n
* If this value is
positive and less than or equals to [UByte.MAX_VALUE], the resulting `UByte` value represents\n * the same
numerical value as this `Int`.\n * The resulting `UByte` value is represented by the least significant 8 bits of this
`Int` value.\n */\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public
inline fun Int.toUByte(): UByte = UByte(this.toByte())\n /**\n * Converts this [Long] value to [UByte].\n *\n
* If
this value is positive and less than or equals to [UByte.MAX_VALUE], the resulting `UByte` value represents\n *
the same numerical value as this `Long`.\n * The resulting `UByte` value is represented by the least significant 8
bits of this `Long` value.\n
*/\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun
Long.toUByte(): UByte = UByte(this.toByte())\n", "/**\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin
Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be
found in the license/LICENSE.txt file.\n */\n\n// Auto-generated file. DO NOT EDIT!\n\npackage kotlin\n\nimport
kotlin.experimental.*\n\n@Suppress("NON_PUBLIC_PRIMARY_CONSTRUCTOR_OF_INLINE_CLASS")\n\n@SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n public inline class UInt @PublishedApi internal

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constructor(@PublishedApi internal val data: Int) : Comparable<UInt> {\n\n  companion object {\n    /**\n     * A constant holding the minimum value an instance of UInt can have.\n     */\n    public const val\n    MIN_VALUE: UInt = UInt(0)\n    /**\n     * A constant holding the maximum value an instance of UInt can\n    have.\n     */\n    public const val MAX_VALUE: UInt = UInt(-1)\n    /**\n     * The number of bytes\n    used to represent an instance of UInt in a binary form.\n     */\n    public const val SIZE_BYTES: Int = 4\n    /**\n     * The number of bits used to represent an instance of UInt in a binary form.\n     */\n    public const\n    val SIZE_BITS: Int = 32\n  }\n  /**\n   * Compares this value with the specified value for order.\n   * Returns\n   zero if this value is equal to the specified other value, a negative number if it's less than other,\n   * or a positive\n   number if it's greater than other.\n   */\n  @kotlin.internal.InlineOnly\n  public inline operator fun\n  compareTo(other: UInt): Int = this.compareTo(other.toUInt())\n  /**\n   * Compares this value with the\n   specified value for order.\n   * Returns zero if this value is equal to the specified other value, a negative number if\n   it's less than other,\n   * or a positive number if it's greater than other.\n   */\n  @kotlin.internal.InlineOnly\n  public inline operator fun compareTo(other: UShort): Int = this.compareTo(other.toUInt())\n  /**\n   *\n   Compares this value with the specified value for order.\n   * Returns zero if this value is equal to the specified other\n   value, a negative number if it's less than other,\n   * or a positive number if it's greater than other.\n   */\n  @kotlin.internal.InlineOnly\n  @Suppress(\"OVERRIDE_BY_INLINE\")\n  public override inline operator fun\n  compareTo(other: UInt): Int = uintCompare(this.data, other.data)\n  /**\n   * Compares this value with the\n   specified value for order.\n   * Returns zero if this value is equal to the specified other value, a negative number if\n   it's less than other,\n   * or a positive number if it's greater than other.\n   */\n  @kotlin.internal.InlineOnly\n  public inline operator fun compareTo(other: ULong): Int = this.toULong().compareTo(other)\n  /**\n   * Adds the\n   other value to this value.\n   */\n  @kotlin.internal.InlineOnly\n  public inline operator fun plus(other: UInt): UInt =\n  this.plus(other.toUInt())\n  /**\n   * Adds the other value to this value.\n   */\n  @kotlin.internal.InlineOnly\n  public\n  inline operator fun plus(other: UShort): UInt = this.plus(other.toUInt())\n  /**\n   * Adds the other value to this value.\n   */\n  @kotlin.internal.InlineOnly\n  public inline operator fun plus(other: UInt): UInt =\n  UInt(this.data.plus(other.data))\n  /**\n   * Adds the other value to this value.\n   */\n  @kotlin.internal.InlineOnly\n  public\n  inline operator fun plus(other: ULong): ULong = this.toULong().plus(other)\n  /**\n   * Subtracts the other\n   value from this value.\n   */\n  @kotlin.internal.InlineOnly\n  public inline operator fun minus(other: UInt): UInt =\n  this.minus(other.toUInt())\n  /**\n   * Subtracts the other value from this value.\n   */\n  @kotlin.internal.InlineOnly\n  public\n  inline operator fun minus(other: UShort): UInt = this.minus(other.toUInt())\n  /**\n   * Subtracts the other value\n   from this value.\n   */\n  @kotlin.internal.InlineOnly\n  public inline operator fun minus(other: UInt): UInt =\n  UInt(this.data.minus(other.data))\n  /**\n   * Subtracts the other value from this value.\n   */\n  @kotlin.internal.InlineOnly\n  public inline operator fun minus(other: ULong): ULong =\n  this.toULong().minus(other)\n  /**\n   * Multiplies this value by the other value.\n   */\n  @kotlin.internal.InlineOnly\n  public\n  inline operator fun times(other: UInt): UInt = this.times(other.toUInt())\n  /**\n   * Multiplies this value by the\n   other value.\n   */\n  @kotlin.internal.InlineOnly\n  public inline operator fun times(other: UShort): UInt =\n  this.times(other.toUInt())\n  /**\n   * Multiplies this value by the other value.\n   */\n  @kotlin.internal.InlineOnly\n  public\n  inline operator fun times(other: UInt): UInt = UInt(this.data.times(other.data))\n  /**\n   * Multiplies this value\n   by the other value.\n   */\n  @kotlin.internal.InlineOnly\n  public inline operator fun times(other: ULong): ULong =\n  this.toULong().times(other)\n  /**\n   * Divides this value by the other value.\n   */\n  @kotlin.internal.InlineOnly\n  public\n  inline operator fun div(other: UInt): UInt = this.div(other.toUInt())\n  /**\n   * Divides this value by the other\n   value.\n   */\n  @kotlin.internal.InlineOnly\n  public inline operator fun div(other: UShort): UInt =\n  this.div(other.toUInt())\n  /**\n   * Divides this value by the other value.\n   */\n  @kotlin.internal.InlineOnly\n  public\n  inline operator fun div(other: UInt): UInt = uintDivide(this, other)\n  /**\n   * Divides this value by the other value.\n   */\n  @kotlin.internal.InlineOnly\n  public inline operator fun div(other: ULong): ULong =\n  this.toULong().div(other)\n  /**\n   * Calculates the remainder of dividing this value by the other value.\n   */\n  @kotlin.internal.InlineOnly\n  public inline operator fun rem(other: UInt): UInt = this.rem(other.toUInt())\n  /**\n   *\n   Calculates the remainder of dividing this value by the other value.\n   */\n  @kotlin.internal.InlineOnly\n  public\n  inline operator fun rem(other: UShort): UInt = this.rem(other.toUInt())\n  /**\n   * Calculates the remainder of dividing

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this value by the other value. */
@kotlin.internal.InlineOnly
public inline operator fun rem(other: UInt): UInt
= uintRemainder(this, other)
/** Calculates the remainder of dividing this value by the other value. */
@kotlin.internal.InlineOnly
public inline operator fun rem(other: ULong): ULong =
this.toULong().rem(other)
/** Increments this value. */
@kotlin.internal.InlineOnly
public inline
operator fun inc(): UInt = UInt(data.inc())
/** Decrements this value. */
@kotlin.internal.InlineOnly
public inline operator fun dec(): UInt = UInt(data.dec())
/** Creates a range from this value to the specified
[other] value. */
@kotlin.internal.InlineOnly
public inline operator fun rangeTo(other: UInt): UIntRange =
UIntRange(this, other)
/** Shifts this value left by the [bitCount] number of bits. */
@kotlin.internal.InlineOnly
public inline infix fun shl(bitCount: Int): UInt = UInt(data shl bitCount)
/**
Shifts this value right by the [bitCount] number of bits, filling the leftmost bits with zeros. */
@kotlin.internal.InlineOnly
public inline infix fun shr(bitCount: Int): UInt = UInt(data ushr bitCount)
/**
Performs a bitwise AND operation between the two values. */
@kotlin.internal.InlineOnly
public inline infix
fun and(other: UInt): UInt = UInt(this.data and other.data)
/** Performs a bitwise OR operation between the two
values. */
@kotlin.internal.InlineOnly
public inline infix fun or(other: UInt): UInt = UInt(this.data or
other.data)
/** Performs a bitwise XOR operation between the two values. */
@kotlin.internal.InlineOnly
public inline infix fun xor(other: UInt): UInt = UInt(this.data xor other.data)
/** Inverts the bits in this value.
*/
@kotlin.internal.InlineOnly
public inline fun inv(): UInt = UInt(data.inv())
/**
* Converts this
[UInt] value to [Byte].
*
* If this value is less than or equals to [Byte.MAX_VALUE], the resulting `Byte`
value represents
* the same numerical value as this `UInt`.
*
* The resulting `Byte` value is
represented by the least significant 8 bits of this `UInt` value.
* Note that the resulting `Byte` value may be
negative.
*/
@kotlin.internal.InlineOnly
public inline fun toByte(): Byte = data.toByte()
/**
*
* Converts this [UInt] value to [Short].
*
* If this value is less than or equals to [Short.MAX_VALUE], the
resulting `Short` value represents
* the same numerical value as this `UInt`.
*
* The resulting `Short`
value is represented by the least significant 16 bits of this `UInt` value.
* Note that the resulting `Short` value
may be negative.
*/
@kotlin.internal.InlineOnly
public inline fun toShort(): Short = data.toShort()
/**
*
* Converts this [UInt] value to [Int].
*
* If this value is less than or equals to [Int.MAX_VALUE],
the resulting `Int` value represents
* the same numerical value as this `UInt`. Otherwise the result is negative.
*
* The resulting `Int` value has the same binary representation as this `UInt` value.
*/
@kotlin.internal.InlineOnly
public inline fun toInt(): Int = data
/**
*
* Converts this [UInt] value to
[Long].
*
* The resulting `Long` value represents the same numerical value as this `UInt`.
*
* The
least significant 32 bits of the resulting `Long` value are the same as the bits of this `UInt` value,
* whereas the
most significant 32 bits are filled with zeros.
*/
@kotlin.internal.InlineOnly
public inline fun toLong():
Long = data.toLong() and 0xFFFF_FFFF
/**
*
* Converts this [UInt] value to [UByte].
*
* If this
value is less than or equals to [UByte.MAX_VALUE], the resulting `UByte` value represents
* the same
numerical value as this `UInt`.
*
* The resulting `UByte` value is represented by the least significant 8 bits
of this `UInt` value.
*/
@kotlin.internal.InlineOnly
public inline fun toUByte(): UByte =
data.toUByte()
/**
*
* Converts this [UInt] value to [UShort].
*
* If this value is less than or equals
to [UShort.MAX_VALUE], the resulting `UShort` value represents
* the same numerical value as this `UInt`.
*
* The resulting `UShort` value is represented by the least significant 16 bits of this `UInt` value.
*/
@kotlin.internal.InlineOnly
public inline fun toUShort(): UShort = data.toUShort()
/** Returns this value.
*/
@kotlin.internal.InlineOnly
public inline fun toUInt(): UInt = this
/**
*
* Converts this [UInt] value
to [ULong].
*
* The resulting `ULong` value represents the same numerical value as this `UInt`.
*
* The
least significant 32 bits of the resulting `ULong` value are the same as the bits of this `UInt` value,
* whereas the
most significant 32 bits are filled with zeros.
*/
@kotlin.internal.InlineOnly
public inline
fun toULong(): ULong = ULong(data.toLong() and 0xFFFF_FFFF)
/**
*
* Converts this [UInt] value to
[Float].
*
* The resulting value is the closest `Float` to this `UInt` value.
* In case when this `UInt`
value is exactly between two `Float`s,
* the one with zero at least significant bit of mantissa is selected.
*/
@kotlin.internal.InlineOnly
public inline fun toFloat(): Float = this.toDouble().toFloat()
/**
*
* Converts

```

```

this [UInt] value to [Double].\n    *\n    * The resulting `Double` value represents the same numerical value as this
`UInt`.\n    *\n    @kotlin.internal.InlineOnly\n    public inline fun toDouble(): Double = uintToDouble(data)\n\n    public override fun toString(): String = toLong().toString()\n\n}\n\n/**\n * Converts this [Byte] value to [UInt].\n *\n * If this value is positive, the resulting `UInt` value represents the same numerical value as this `Byte`.\n *\n * The least significant 8 bits of the resulting `UInt` value are the same as the bits of this `Byte` value,\n * whereas the most significant 24 bits are filled with the sign bit of this value.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun
Byte.toUInt(): UInt = UInt(this.toInt())\n\n/**\n * Converts this [Short] value to [UInt].\n *\n * If this value is
positive, the resulting `UInt` value represents the same numerical value as this `Short`.\n *\n * The least significant
16 bits of the resulting `UInt` value are the same as the bits of this `Short` value,\n * whereas the most significant 16
bits are filled with the sign bit of this value.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun
Short.toUInt(): UInt = UInt(this.toInt())\n\n/**\n * Converts this [Int] value to [UInt].\n *\n * If this value is positive,
the resulting `UInt` value represents the same numerical value as this `Int`.\n *\n * The resulting `UInt` value has the
same binary representation as this `Int` value.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun
Int.toUInt(): UInt = UInt(this)\n\n/**\n * Converts this [Long] value to [UInt].\n *\n * If this value is positive and less
than or equals to [UInt.MAX_VALUE], the resulting `UInt` value represents\n * the same numerical value as this
`Long`.\n *\n * The resulting `UInt` value is represented by the least significant 32 bits of this `Long` value.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun
Long.toUInt(): UInt = UInt(this.toInt())\n\n/**\n * Converts this [Float] value to [UInt].\n *\n * The fractional part,
if any, is rounded down towards zero.\n * Returns zero if this `Float` value is negative or `NaN`,
[UInt.MAX_VALUE] if it's bigger than `UInt.MAX_VALUE`.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun
Float.toUInt(): UInt = doubleToUInt(this.toDouble())\n\n/**\n * Converts this [Double] value to [UInt].\n *\n * The
fractional part, if any, is rounded down towards zero.\n * Returns zero if this `Double` value is negative or `NaN`,
[UInt.MAX_VALUE] if it's bigger than `UInt.MAX_VALUE`.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun
Double.toUInt(): UInt = doubleToUInt(this)\n", "*/\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin
Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be
found in the license/LICENSE.txt file.\n *\n @kotlin.internal.InlineOnly\n @kotlin.internal.InlineOnly\n @kotlin.nimpor
kotlin.experimental.*\n @Suppress("NON_PUBLIC_PRIMARY_CONSTRUCTOR_OF_INLINE_CLASS")\n @
SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n public inline class UShort @PublishedApi internal
constructor(@PublishedApi internal val data: Short) : Comparable<UShort> {\n\n    companion object {\n        /**\n
         * A constant holding the minimum value an instance of UShort can have.\n
         *\n         public const val
MIN_VALUE: UShort = UShort(0)\n\n        /**\n
         * A constant holding the maximum value an instance of
UShort can have.\n
         *\n         public const val MAX_VALUE: UShort = UShort(-1)\n\n        /**\n
         * The
number of bytes used to represent an instance of UShort in a binary form.\n
         *\n         public const val
SIZE_BYTES: Int = 2\n\n        /**\n
         * The number of bits used to represent an instance of UShort in a binary
form.\n
         *\n         public const val SIZE_BITS: Int = 16\n    }\n\n    /**\n
     * Compares this value with the
specified value for order.\n
     * Returns zero if this value is equal to the specified other value, a negative number if
it's less than other,\n
     * or a positive number if it's greater than other.\n
     *\n     @kotlin.internal.InlineOnly\n
     public inline operator fun compareTo(other: UByte): Int = this.toInt().compareTo(other.toInt())\n\n    /**\n
     * Compares this value with the specified value for order.\n
     * Returns zero if this value is equal to the specified other
value, a negative number if it's less than other,\n
     * or a positive number if it's greater than other.\n
     *\n     @kotlin.internal.InlineOnly\n
     @Suppress("OVERRIDE_BY_INLINE")\n     public override inline operator fun
compareTo(other: UShort): Int = this.toInt().compareTo(other.toInt())\n\n    /**\n
     * Compares this value with the
specified value for order.\n
     * Returns zero if this value is equal to the specified other value, a negative number if

```



```

it's less than other,\n * or a positive number if it's greater than other.\n */\n @kotlin.internal.InlineOnly\n
public inline operator fun compareTo(other: UInt): Int = this.toUInt().compareTo(other)\n\n /**\n * Compares
this value with the specified value for order.\n * Returns zero if this value is equal to the specified other value, a
negative number if it's less than other,\n * or a positive number if it's greater than other.\n */\n
@kotlin.internal.InlineOnly\n public inline operator fun compareTo(other: ULong): Int =
this.toULong().compareTo(other)\n\n /** Adds the other value to this value. */\n @kotlin.internal.InlineOnly\n
public inline operator fun plus(other: UByte): UInt = this.toUInt().plus(other.toUInt())\n\n /** Adds the other value
to this value. */\n @kotlin.internal.InlineOnly\n public inline operator fun plus(other: UShort): UInt =
this.toUInt().plus(other.toUInt())\n\n /** Adds the other value to this value. */\n @kotlin.internal.InlineOnly\n
public inline operator fun plus(other: UInt): UInt = this.toUInt().plus(other)\n\n /** Adds the other value to this
value. */\n @kotlin.internal.InlineOnly\n public inline operator fun plus(other: ULong): ULong =
this.toULong().plus(other)\n\n\n /** Subtracts the other value from this value. */\n @kotlin.internal.InlineOnly\n
public inline operator fun minus(other: UByte): UInt = this.toUInt().minus(other.toUInt())\n\n /** Subtracts the
other value from this value. */\n @kotlin.internal.InlineOnly\n public inline operator fun minus(other: UShort):
UInt = this.toUInt().minus(other.toUInt())\n\n /** Subtracts the other value from this value. */\n
@kotlin.internal.InlineOnly\n public inline operator fun minus(other: UInt): UInt = this.toUInt().minus(other)\n\n
/** Subtracts the other value from this value. */\n @kotlin.internal.InlineOnly\n public inline operator fun
minus(other: ULong): ULong = this.toULong().minus(other)\n\n\n /** Multiplies this value by the other value. */\n
@kotlin.internal.InlineOnly\n public inline operator fun times(other: UByte): UInt =
this.toUInt().times(other.toUInt())\n\n /** Multiplies this value by the other value. */\n
@kotlin.internal.InlineOnly\n public inline operator fun times(other: UShort): UInt =
this.toUInt().times(other.toUInt())\n\n /** Multiplies this value by the other value. */\n
@kotlin.internal.InlineOnly\n public inline operator fun times(other: UInt): UInt = this.toUInt().times(other)\n\n
/** Multiplies this value by the other value. */\n @kotlin.internal.InlineOnly\n public inline operator fun
times(other: ULong): ULong = this.toULong().times(other)\n\n\n /** Divides this value by the other value. */\n
@kotlin.internal.InlineOnly\n public inline operator fun div(other: UByte): UInt =
this.toUInt().div(other.toUInt())\n\n /** Divides this value by the other value. */\n @kotlin.internal.InlineOnly\n
public inline operator fun div(other: UShort): UInt = this.toUInt().div(other.toUInt())\n\n /** Divides this value by
the other value. */\n @kotlin.internal.InlineOnly\n public inline operator fun div(other: UInt): UInt =
this.toUInt().div(other)\n\n /** Divides this value by the other value. */\n @kotlin.internal.InlineOnly\n public
inline operator fun div(other: ULong): ULong = this.toULong().div(other)\n\n\n /** Calculates the remainder of
dividing this value by the other value. */\n @kotlin.internal.InlineOnly\n public inline operator fun rem(other:
UByte): UInt = this.toUInt().rem(other.toUInt())\n\n /** Calculates the remainder of dividing this value by the other
value. */\n @kotlin.internal.InlineOnly\n public inline operator fun rem(other: UShort): UInt =
this.toUInt().rem(other.toUInt())\n\n /** Calculates the remainder of dividing this value by the other value. */\n
@kotlin.internal.InlineOnly\n public inline operator fun rem(other: UInt): UInt = this.toUInt().rem(other)\n\n /**
Calculates the remainder of dividing this value by the other value. */\n @kotlin.internal.InlineOnly\n public
inline operator fun rem(other: ULong): ULong = this.toULong().rem(other)\n\n\n /** Increments this value. */\n
@kotlin.internal.InlineOnly\n public inline operator fun inc(): UShort = UShort(data.inc())\n\n /** Decrements
this value. */\n @kotlin.internal.InlineOnly\n public inline operator fun dec(): UShort = UShort(data.dec())\n\n\n
/** Creates a range from this value to the specified [other] value. */\n @kotlin.internal.InlineOnly\n public inline
operator fun rangeTo(other: UShort): UIntRange = UIntRange(this.toUInt(), other.toUInt())\n\n\n /** Performs a
bitwise AND operation between the two values. */\n @kotlin.internal.InlineOnly\n public inline infix fun
and(other: UShort): UShort = UShort(this.data and other.data)\n\n\n /** Performs a bitwise OR operation between the
two values. */\n @kotlin.internal.InlineOnly\n public inline infix fun or(other: UShort): UShort =
UShort(this.data or other.data)\n\n\n /** Performs a bitwise XOR operation between the two values. */\n
@kotlin.internal.InlineOnly\n public inline infix fun xor(other: UShort): UShort = UShort(this.data xor
other.data)\n\n\n /** Inverts the bits in this value. */\n @kotlin.internal.InlineOnly\n public inline fun inv():

```

```

UShort = UShort(data.inv())\n\n /**\n * Converts this [UShort] value to [Byte].\n *\n * If this value is less
than or equals to [Byte.MAX_VALUE], the resulting `Byte` value represents\n
* the same numerical value as this
`UShort`.\n
*\n
* The resulting `Byte` value is represented by the least significant 8 bits of this `UShort`
value.\n
* Note that the resulting `Byte` value may be negative.\n
*/\n @kotlin.internal.InlineOnly\n public
inline fun toByte(): Byte = data.toByte()\n\n /**\n * Converts this [UShort] value to [Short].\n
*\n
* If this value is less than or equals to [Short.MAX_VALUE], the resulting `Short` value represents\n
* the same
numerical value as this `UShort`. Otherwise the result is negative.\n
*\n
* The resulting `Short` value has the
same binary representation as this `UShort` value.\n
*/\n @kotlin.internal.InlineOnly\n public inline fun
toShort(): Short = data\n\n /**\n * Converts this [UShort] value to [Int].\n
*\n
* The resulting `Int` value
represents the same numerical value as this `UShort`.\n
*\n
* The least significant 16 bits of the resulting `Int`
value are the same as the bits of this `UShort` value,\n
* whereas the most significant 16 bits are filled with
zeros.\n
*/\n @kotlin.internal.InlineOnly\n public inline fun toInt(): Int = data.toInt() and 0xFFFF\n\n /**\n
* Converts this [UShort] value to [Long].\n
*\n
* The resulting `Long` value represents the same numerical
value as this `UShort`.\n
*\n
* The least significant 16 bits of the resulting `Long` value are the same as the bits
of this `UShort` value,\n
* whereas the most significant 48 bits are filled with zeros.\n
*/\n
@kotlin.internal.InlineOnly\n public inline fun toLong(): Long = data.toLong() and 0xFFFF\n\n /**\n
*
Converts this [UShort] value to [UByte].\n
*\n
* If this value is less than or equals to [UByte.MAX_VALUE],
the resulting `UByte` value represents\n
* the same numerical value as this `UShort`.\n
*\n
* The resulting
`UByte` value is represented by the least significant 8 bits of this `UShort` value.\n
*/\n
@kotlin.internal.InlineOnly\n public inline fun toUByte(): UByte = data.toUByte()\n\n /** Returns this value. */\n
@kotlin.internal.InlineOnly\n public inline fun toUShort(): UShort = this\n\n /**\n * Converts this [UShort]
value to [UInt].\n
*\n
* The resulting `UInt` value represents the same numerical value as this `UShort`.\n
*\n
* The least significant 16 bits of the resulting `UInt` value are the same as the bits of this `UShort` value,\n
* whereas the most significant 16 bits are filled with zeros.\n
*/\n @kotlin.internal.InlineOnly\n public inline
fun toUInt(): UInt = UInt(data.toInt() and 0xFFFF)\n\n /**\n * Converts this [UShort] value to [ULong].\n
*\n
* The resulting `ULong` value represents the same numerical value as this `UShort`.\n
*\n
* The least
significant 16 bits of the resulting `ULong` value are the same as the bits of this `UShort` value,\n
* whereas the
most significant 48 bits are filled with zeros.\n
*/\n @kotlin.internal.InlineOnly\n public inline fun toULong():
ULong = ULong(data.toLong() and 0xFFFF)\n\n /**\n * Converts this [UShort] value to [Float].\n
*\n
* The resulting `Float` value represents the same numerical value as this `UShort`.\n
*/\n
@kotlin.internal.InlineOnly\n public inline fun toFloat(): Float = this.toInt().toFloat()\n\n /**\n * Converts this
[UShort] value to [Double].\n
*\n
* The resulting `Double` value represents the same numerical value as this
`UShort`.\n
*/\n @kotlin.internal.InlineOnly\n public inline fun toDouble(): Double =
this.toInt().toDouble()\n\n public override fun toString(): String = toInt().toString()\n\n\n /**\n * Converts this
[Byte] value to [UShort].\n
*\n
* If this value is positive, the resulting `UShort` value represents the same numerical
value as this `Byte`.\n
*\n
* The least significant 8 bits of the resulting `UShort` value are the same as the bits of this
`Byte` value,\n
* whereas the most significant 8 bits are filled with the sign bit of this value.\n
*/\n
@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
Byte.toUShort(): UShort = UShort(this.toShort())\n\n /**\n * Converts this [Short] value to [UShort].\n
*\n
* If this value is positive, the resulting `UShort` value represents the same numerical value as this `Short`.\n
*\n
* The
resulting `UShort` value has the same binary representation as this `Short` value.\n
*/\n
@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
Short.toUShort(): UShort = UShort(this)\n\n /**\n * Converts this [Int] value to [UShort].\n
*\n
* If this value is
positive and less than or equals to [UShort.MAX_VALUE], the resulting `UShort` value represents\n
* the same
numerical value as this `Int`.\n
*\n
* The resulting `UShort` value is represented by the least significant 16 bits of
this `Int` value.\n
*/\n
@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
Int.toUShort(): UShort = UShort(this.toShort())\n\n /**\n * Converts this [Long] value to [UShort].\n
*\n
* If
this value is positive and less than or equals to [UShort.MAX_VALUE], the resulting `UShort` value represents\n
*

```

the same numerical value as this `Long`. The resulting `UShort` value is represented by the least significant 16 bits of this `Long` value.

```
*/\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun  
Long.toUShort(): UShort = UShort(this.toShort())\n", /*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin  
Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be  
found in the license/LICENSE.txt file.\n */\n// Auto-generated file. DO NOT EDIT!\n\npackage  
kotlin.ranges\n\n/*\n * A range of values of type `Char`.\n */\npublic class CharRange(start: Char, endInclusive:  
Char) : CharProgression(start, endInclusive, 1), ClosedRange<Char> {\n    override val start: Char get() = first\n    override val endInclusive: Char get() = last\n\n    override fun contains(value: Char): Boolean = first <= value &&  
value <= last\n    override fun isEmpty(): Boolean = first > last\n    override fun equals(other: Any?): Boolean =\n        other is CharRange && (isEmpty() && other.isEmpty()) ||\n        first == other.first && last ==\n        other.last\n    override fun hashCode(): Int =\n        if (isEmpty()) -1 else (31 * first.toInt() + last.toInt())\n    override fun toString(): String = "$first..$last"\n\n    companion object {\n        /** An empty range of values of  
type Char. */\n        public val EMPTY: CharRange = CharRange(1.toChar(), 0.toChar())\n    }\n}\n\n/*\n * A range of values of type `Int`.\n */\npublic class IntRange(start: Int, endInclusive: Int) : IntProgression(start,  
endInclusive, 1), ClosedRange<Int> {\n    override val start: Int get() = first\n    override val endInclusive: Int get() =\n        last\n    override fun contains(value: Int): Boolean = first <= value && value <= last\n    override fun isEmpty():  
Boolean = first > last\n    override fun equals(other: Any?): Boolean =\n        other is IntRange && (isEmpty() &&  
other.isEmpty()) ||\n        first == other.first && last == other.last\n    override fun hashCode(): Int =\n        if  
(isEmpty()) -1 else (31 * first + last)\n    override fun toString(): String = "$first..$last"\n\n    companion object  
{\n        /** An empty range of values of type Int. */\n        public val EMPTY: IntRange = IntRange(1, 0)\n    }\n}\n\n/*\n * A range of values of type `Long`.\n */\npublic class LongRange(start: Long, endInclusive: Long) :  
LongProgression(start, endInclusive, 1), ClosedRange<Long> {\n    override val start: Long get() = first\n    override  
val endInclusive: Long get() = last\n    override fun contains(value: Long): Boolean = first <= value && value <=  
last\n    override fun isEmpty(): Boolean = first > last\n    override fun equals(other: Any?): Boolean =\n        other is LongRange && (isEmpty() && other.isEmpty()) ||\n        first == other.first && last == other.last\n    override fun hashCode(): Int =\n        if (isEmpty()) -1 else (31 * (first xor (first ushr 32)) + (last xor (last ushr  
32))).toInt()\n    override fun toString(): String = "$first..$last"\n\n    companion object {\n        /** An empty  
range of values of type Long. */\n        public val EMPTY: LongRange = LongRange(1, 0)\n    }\n}\n", /*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is  
governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("CollectionsKt")\n@file:UseExperimental(  
kotlin.experimental.ExperimentalTypeInference::class)\n\npackage kotlin.collections\n\nimport  
kotlin.contracts.*\n\ninternal object EmptyIterator : ListIterator<Nothing> {\n    override fun hasNext(): Boolean =  
false\n    override fun hasPrevious(): Boolean = false\n    override fun nextIndex(): Int = 0\n    override fun  
previousIndex(): Int = -1\n    override fun next(): Nothing = throw NoSuchElementException()\n    override fun  
previous(): Nothing = throw NoSuchElementException()\n}\n\ninternal object EmptyList : List<Nothing>,  
Serializable, RandomAccess {\n    private const val serialVersionUID: Long = -7390468764508069838L\n\n    override fun equals(other: Any?): Boolean = other is List<*> && other.isEmpty()\n    override fun hashCode(): Int  
= 1\n    override fun toString(): String = "[]"\n\n    override val size: Int get() = 0\n    override fun isEmpty():  
Boolean = true\n    override fun contains(element: Nothing): Boolean = false\n    override fun containsAll(elements:  
Collection<Nothing>): Boolean = elements.isEmpty()\n\n    override fun get(index: Int): Nothing = throw  
IndexOutOfBoundsException("Empty list doesn't contain element at index $index.")\n    override fun  
indexOf(element: Nothing): Int = -1\n    override fun lastIndexOf(element: Nothing): Int = -1\n\n    override fun  
iterator(): Iterator<Nothing> = EmptyIterator\n    override fun listIterator(): ListIterator<Nothing> = EmptyIterator\n\n    override fun listIterator(index: Int): ListIterator<Nothing> {\n        if (index != 0) throw  
IndexOutOfBoundsException("Index: $index")\n        return EmptyIterator\n    }\n\n    override fun  
subList(fromIndex: Int, toIndex: Int): List<Nothing> {\n        if (fromIndex == 0 && toIndex == 0) return this\n
```

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throw IndexOutOfBoundsException("fromIndex: $fromIndex, toIndex: $toIndex")\n }
private fun readResolve(): Any = EmptyList()\n\ninternal fun <T> Array<out T>.asCollection(): Collection<T> =
ArrayAsCollection(this, isVarargs = false)\n\nprivate class ArrayAsCollection<T>(val values: Array<out T>, val
isVarargs: Boolean) : Collection<T> {\n    override val size: Int get() = values.size\n    override fun isEmpty():
Boolean = values.isEmpty()\n    override fun contains(element: T): Boolean = values.contains(element)\n    override
fun containsAll(elements: Collection<T>): Boolean = elements.all { contains(it) }\n    override fun iterator():
Iterator<T> = values.iterator()\n    // override hidden toArray implementation to prevent copying of values array\n
public fun toArray(): Array<out Any?> = values.copyToArrayOfAny(isVarargs)\n}\n\n/**\n * Returns an empty
read-only list. The returned list is serializable (JVM).\n * @sample
samples.collections.Collections.Lists.emptyReadOnlyList\n * ^\npublic fun <T> emptyList(): List<T> =
EmptyList()\n\n/**\n * Returns a new read-only list of given elements. The returned list is serializable (JVM).\n *
@sample samples.collections.Collections.Lists.readOnlyList\n * ^\npublic fun <T> listOf(vararg elements: T):
List<T> = if (elements.size > 0) elements.asList() else emptyList()\n\n/**\n * Returns an empty read-only list. The
returned list is serializable (JVM).\n * @sample samples.collections.Collections.Lists.emptyReadOnlyList\n *
^@kotlin.internal.InlineOnly\npublic inline fun <T> listOf(): List<T> = emptyList()\n\n/**\n * Returns an empty
new [MutableList].\n * @sample samples.collections.Collections.Lists.emptyMutableList\n * ^\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline fun <T> mutableListOf(): MutableList<T> =
ArrayList()\n\n/**\n * Returns an empty new [ArrayList].\n * @sample
samples.collections.Collections.Lists.emptyArrayList\n * ^\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline fun <T> arrayListOf(): ArrayList<T> =
ArrayList()\n\n/**\n * Returns a new [MutableList] with the given elements.\n * @sample
samples.collections.Collections.Lists.mutableList\n * ^\npublic fun <T> mutableListOf(vararg elements: T):
MutableList<T> =\n    if (elements.size == 0) ArrayList() else ArrayList(ArrayAsCollection(elements, isVarargs =
true))\n\n/**\n * Returns a new [ArrayList] with the given elements.\n * @sample
samples.collections.Collections.Lists.arrayList\n * ^\npublic fun <T> arrayListOf(vararg elements: T): ArrayList<T>
=\n    if (elements.size == 0) ArrayList() else ArrayList(ArrayAsCollection(elements, isVarargs = true))\n\n/**\n *
Returns a new read-only list either of single given element, if it is not null, or empty list if the element is null. The
returned list is serializable (JVM).\n * @sample samples.collections.Collections.Lists.listOfNotNull\n * ^\npublic fun
<T : Any> listOfNotNull(element: T?): List<T> = if (element != null) listOf(element) else emptyList()\n\n/**\n *
Returns a new read-only list only of those given elements, that are not null. The returned list is serializable
(JVM).\n * @sample samples.collections.Collections.Lists.listOfNotNull\n * ^\npublic fun <T : Any>
listOfNotNull(vararg elements: T?): List<T> = elements.filterNotNull()\n\n/**\n * Creates a new read-only list with
the specified [size], where each element is calculated by calling the specified\n * [init] function.\n * ^\n * The
function [init] is called for each list element sequentially starting from the first one.\n * It should return the value for
a list element given its index.\n * ^\n * @sample samples.collections.Collections.Lists.readOnlyListFromInitializer\n *
^@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline fun <T> List(size: Int, init: (index: Int) -> T):
List<T> = MutableList(size, init)\n\n/**\n * Creates a new mutable list with the specified [size], where each element
is calculated by calling the specified\n * [init] function.\n * ^\n * The function [init] is called for each list element
sequentially starting from the first one.\n * It should return the value for a list element given its index.\n * ^\n *
@sample samples.collections.Collections.Lists.mutableListFromInitializer\n * ^\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline fun <T> MutableList(size: Int, init: (index:
Int) -> T): MutableList<T> {\n    val list = ArrayList<T>(size)\n    repeat(size) { index -> list.add(init(index)) }\n
return list}\n\n/**\n * Builds a new read-only [List] by populating a [MutableList] using the given
[builderAction]\n * and returning a read-only list with the same elements.\n * ^\n * The list passed as a receiver to the
[builderAction] is valid only inside that function.\n * Using it outside of the function produces an unspecified
behavior.\n * ^\n * @sample samples.collections.Builders.Lists.buildListSample\n * ^\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <E>
buildList(@BuilderInference builderAction: MutableList<E>.() -> Unit): List<E> {\n    contract {

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callsInPlace(builderAction, InvocationKind.EXACTLY_ONCE) }\n  return
ArrayList<E>().apply(builderAction)\n}\n\n/**\n * Builds a new read-only [List] by populating a [MutableList]
using the given [builderAction]\n * and returning a read-only list with the same elements.\n * The list passed as
a receiver to the [builderAction] is valid only inside that function.\n * Using it outside of the function produces an
unspecified behavior.\n * [capacity] is used to hint the expected number of elements added in the
[builderAction].\n * @throws IllegalArgumentException if the given [capacity] is negative.\n * @sample
samples.collections.Builders.Lists.buildListSample\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <E>
buildList(capacity: Int, @BuilderInference builderAction: MutableList<E>().-> Unit): List<E> {\n  contract {
callsInPlace(builderAction, InvocationKind.EXACTLY_ONCE) }\n  checkBuilderCapacity(capacity)\n  return
ArrayList<E>(capacity).apply(builderAction)\n}\n\n/**\n * Returns an [IntRange] of the valid indices for this
collection.\n * @sample samples.collections.Collections.Collections.indicesOfCollection\n *\npublic val
Collection<*>.indices: IntRange\n  get() = 0..size - 1\n\n/**\n * Returns the index of the last item in the list or -1 if
the list is empty.\n * @sample samples.collections.Collections.Lists.lastIndexOfList\n *\npublic val <T>
List<T>.lastIndex: Int\n  get() = this.size - 1\n\n/**\n * Returns `true` if the collection is not empty.\n * @sample
samples.collections.Collections.Collections.collectionIsNotEmpty\n *\n@kotlin.internal.InlineOnly\npublic inline
fun <T> Collection<T>.isNotEmpty(): Boolean = !isEmpty()\n\n/**\n * Returns `true` if this nullable collection is
either null or empty.\n * @sample samples.collections.Collections.Collections.collectionOrNullEmpty\n
*\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun <T> Collection<T>?.isNullOrEmpty():
Boolean {\n  contract {\n    returns(false) implies (this@isNullOrEmpty != null)\n  }\n\n  return this == null ||
this.isEmpty()\n}\n\n/**\n * Returns this Collection if it's not `null` and the empty list otherwise.\n * @sample
samples.collections.Collections.Collections.collectionOrEmpty\n *\n@kotlin.internal.InlineOnly\npublic inline fun
<T> Collection<T>?.orEmpty(): Collection<T> = this ?: emptyList()\n\n/**\n * Returns this List if it's not `null` and
the empty list otherwise.\n * @sample samples.collections.Collections.Lists.listOrEmpty\n
*\n@kotlin.internal.InlineOnly\npublic inline fun <T> List<T>?.orEmpty(): List<T> = this ?: emptyList()\n\n/**\n *
Returns this collection if it's not empty\n * or the result of calling [defaultValue] function if the collection is
empty.\n * @sample samples.collections.Collections.Collections.collectionIfEmpty\n
*\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun <C, R> C.ifEmpty(defaultValue: () ->
R): R where C : Collection<*>, C : R =\n  if (isEmpty()) defaultValue() else this\n\n\n/**\n * Checks if all
elements in the specified collection are contained in this collection.\n * Allows to overcome type-safety
restriction of `containsAll` that requires to pass a collection of type `Collection<E>`.\n * @sample
samples.collections.Collections.Collections.collectionContainsAll\n
*\n@Suppress("EXTENSION_SHADOWED_BY_MEMBER") // false warning, extension takes precedence in
some cases\n@kotlin.internal.InlineOnly\npublic inline fun <@kotlin.internal.OnlyInputTypes T>
Collection<T>.containsAll(elements: Collection<T>): Boolean = this.containsAll(elements)\n\ninternal fun <T>
List<T>.optimizeReadOnlyList() = when (size) {\n  0 -> emptyList()\n  1 -> listOf(this[0])\n  else ->
this\n}\n\n/**\n * Searches this list or its range for the provided [element] using the binary search algorithm.\n * The
list is expected to be sorted into ascending order according to the Comparable natural ordering of its elements,\n *
otherwise the result is undefined.\n * If the list contains multiple elements equal to the specified [element], there
is no guarantee which one will be found.\n * `null` value is considered to be less than any non-null value.\n *
@return the index of the element, if it is contained in the list within the specified range;\n * otherwise, the inverted
insertion point `(-insertion point - 1)`. \n * The insertion point is defined as the index at which the element should be
inserted,\n * so that the list (or the specified subrange of list) still remains sorted.\n * @sample
samples.collections.Collections.Lists.binarySearchOnComparable\n * @sample
samples.collections.Collections.Lists.binarySearchWithBoundaries\n *\npublic fun <T : Comparable<T>>
List<T?>.binarySearch(element: T?, fromIndex: Int = 0, toIndex: Int = size): Int {\n  rangeCheck(size, fromIndex,
toIndex)\n\n  var low = fromIndex\n  var high = toIndex - 1\n\n  while (low <= high) {\n    val mid = (low +
high).ushr(1) // safe from overflows\n    val midVal = get(mid)\n    val cmp = compareValues(midVal,

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element)\n\n    if (cmp < 0)\n        low = mid + 1\n    else if (cmp > 0)\n        high = mid - 1\n    else\n        return mid // key found\n    }\n    return -(low + 1) // key not found\n}\n\n/**\n * Searches this list or its range
for the provided [element] using the binary search algorithm.\n * The list is expected to be sorted into ascending
order according to the specified [comparator],\n * otherwise the result is undefined.\n *\n * If the list contains
multiple elements equal to the specified [element], there is no guarantee which one will be found.\n *\n * `null`
value is considered to be less than any non-null value.\n *\n * @return the index of the element, if it is contained in
the list within the specified range;\n * otherwise, the inverted insertion point `(-insertion point - 1)`.\n * The
insertion point is defined as the index at which the element should be inserted,\n * so that the list (or the specified
subrange of list) still remains sorted according to the specified [comparator].\n * @sample
samples.collections.Collections.Lists.binarySearchWithComparator\n */\npublic fun <T>
List<T>.binarySearch(element: T, comparator: Comparator<in T>, fromIndex: Int = 0, toIndex: Int = size): Int {\n
rangeCheck(size, fromIndex, toIndex)\n\n    var low = fromIndex\n    var high = toIndex - 1\n    while (low <=
high) {\n        val mid = (low + high).ushr(1) // safe from overflows\n        val midVal = get(mid)\n        val cmp =
comparator.compare(midVal, element)\n        if (cmp < 0)\n            low = mid + 1\n        else if (cmp > 0)\n
            high = mid - 1\n        else\n            return mid // key found\n    }\n    return -(low + 1) // key not found\n}\n\n/**\n * Searches this list or its range for an element having the key returned by the specified [selector] function\n * equal to
the provided [key] value using the binary search algorithm.\n * The list is expected to be sorted into ascending order
according to the Comparable natural ordering of keys of its elements.\n * otherwise the result is undefined.\n *\n * If
the list contains multiple elements with the specified [key], there is no guarantee which one will be found.\n *\n * `null`
value is considered to be less than any non-null value.\n *\n * @return the index of the element with the
specified [key], if it is contained in the list within the specified range;\n * otherwise, the inverted insertion point `(-
insertion point - 1)`.\n * The insertion point is defined as the index at which the element should be inserted,\n * so
that the list (or the specified subrange of list) still remains sorted.\n * @sample
samples.collections.Collections.Lists.binarySearchByKey\n */\npublic inline fun <T, K : Comparable<K>>
List<T>.binarySearchBy(\n    key: K?,\n    fromIndex: Int = 0,\n    toIndex: Int = size,\n    crossinline selector: (T) ->
K?)\n): Int =\n    binarySearch(fromIndex, toIndex) { compareValues(selector(it), key) }\n\n// do not introduce this
overload --- too rare\n//\npublic fun <T, K> List<T>.binarySearchBy(key: K, comparator: Comparator<K>,\n
fromIndex: Int = 0, toIndex: Int = size(), selector: (T) -> K): Int =\n//    binarySearch(fromIndex, toIndex) {\n
comparator.compare(selector(it), key) }\n\n/**\n * Searches this list or its range for an element for which the
given [comparison] function returns zero using the binary search algorithm.\n *\n * The list is expected to be sorted
so that the signs of the [comparison] function's return values ascend on the list elements,\n * i.e. negative values
come before zero and zeroes come before positive values.\n * Otherwise, the result is undefined.\n *\n * If the list
contains multiple elements for which [comparison] returns zero, there is no guarantee which one will be found.\n *\n * @param comparison function that returns zero when called on the list element being searched.\n * On the
elements coming before the target element, the function must return negative values;\n * on the elements coming
after the target element, the function must return positive values.\n *\n * @return the index of the found element, if
it is contained in the list within the specified range;\n * otherwise, the inverted insertion point `(-insertion point -
1)`.\n * The insertion point is defined as the index at which the element should be inserted,\n * so that the list (or the
specified subrange of list) still remains sorted.\n * @sample
samples.collections.Collections.Lists.binarySearchWithComparisonFunction\n */\npublic fun <T>
List<T>.binarySearch(fromIndex: Int = 0, toIndex: Int = size, comparison: (T) -> Int): Int {\n    rangeCheck(size,
fromIndex, toIndex)\n\n    var low = fromIndex\n    var high = toIndex - 1\n    while (low <= high) {\n        val mid
= (low + high).ushr(1) // safe from overflows\n        val midVal = get(mid)\n        val cmp = comparison(midVal)\n\n
        if (cmp < 0)\n            low = mid + 1\n        else if (cmp > 0)\n            high = mid - 1\n        else\n
            return mid // key found\n    }\n    return -(low + 1) // key not found\n}\n\n/**\n * Checks that `from` and `to` are in\n * the
range of [0..size] and throws an appropriate exception, if they aren't.\n *\n * @private fun rangeCheck(size: Int,
fromIndex: Int, toIndex: Int) {\n    when {\n        fromIndex > toIndex -> throw
IllegalArgumentException("fromIndex ($fromIndex) is greater than toIndex ($toIndex).")\n        fromIndex < 0 ->

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throw IndexOutOfBoundsException("fromIndex ($fromIndex) is less than zero.")\n      toIndex > size -> throw
IndexOutOfBoundsException("toIndex ($toIndex) is greater than size ($size).")\n
}\n}\n\n@PublishedApi\n@SinceKotlin("1.3")\ninternal expect fun checkIndexOverflow(index: Int):
Int\n\n@PublishedApi\n@SinceKotlin("1.3")\ninternal expect fun checkCountOverflow(count: Int):
Int\n\n\n@PublishedApi\n@SinceKotlin("1.3")\ninternal fun throwIndexOverflow() { throw
ArithmeticException("Index overflow has happened.") }\n\n@PublishedApi\n@SinceKotlin("1.3")\ninternal fun
throwCountOverflow() { throw ArithmeticException("Count overflow has happened.") }\n\n"/*\n * Copyright
2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed
by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*/\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("MapsKt")\n@file:UseExperimental(kotlin
.experimental.ExperimentalTypeInference::class)\n\npackage kotlin.collections\n\nimport
kotlin.contracts.*\n\nprivate object EmptyMap : Map<Any?, Nothing>, Serializable { \n  private const val
serialVersionUID: Long = 8246714829545688274\n\n  override fun equals(other: Any?): Boolean = other is
Map<*, *> && other.isEmpty()\n  override fun hashCode(): Int = 0\n  override fun toString(): String = "{}"\n\n
  override val size: Int get() = 0\n  override fun isEmpty(): Boolean = true\n\n  override fun containsKey(key:
Any?): Boolean = false\n  override fun containsValue(value: Nothing): Boolean = false\n  override fun get(key:
Any?): Nothing? = null\n  override val entries: Set<Map.Entry<Any?, Nothing>> get() = EmptySet\n  override
val keys: Set<Any?> get() = EmptySet\n  override val values: Collection<Nothing> get() = EmptyList\n\n  private
fun readResolve(): Any = EmptyMap\n}\n\n/**\n * Returns an empty read-only map of specified type.\n * The
returned map is serializable (JVM).\n * @sample samples.collections.Maps.Instantiation.emptyReadOnlyMap\n
*/\n\npublic fun <K, V> emptyMap(): Map<K, V> = @Suppress("UNCHECKED_CAST") (EmptyMap as Map<K,
V>)\n\n/**\n * Returns a new read-only map with the specified contents, given as a list of pairs\n * where the first
value is the key and the second is the value.\n * If multiple pairs have the same key, the resulting map will
contain the value from the last of those pairs.\n * Entries of the map are iterated in the order they were
specified.\n * The returned map is serializable (JVM).\n * @sample
samples.collections.Maps.Instantiation.mapFromPairs\n */\n\npublic fun <K, V> mapOf(vararg pairs: Pair<K, V>):
Map<K, V> =\n  if (pairs.size > 0) pairs.toMap(LinkedHashMap(mapCapacity(pairs.size))) else
emptyMap()\n\n/**\n * Returns an empty read-only map.\n * The returned map is serializable (JVM).\n *
@sample samples.collections.Maps.Instantiation.emptyReadOnlyMap\n */\n\n@kotlin.internal.InlineOnly\npublic
inline fun <K, V> mapOf(): Map<K, V> = emptyMap()\n\n/**\n * Returns an empty new [MutableMap].\n * The
returned map preserves the entry iteration order.\n * @sample
samples.collections.Maps.Instantiation.emptyMutableMap\n
*/\n\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline fun <K, V> mutableMapOf():
MutableMap<K, V> = LinkedHashMap()\n\n/**\n * Returns a new [MutableMap] with the specified contents, given
as a list of pairs\n * where the first component is the key and the second is the value.\n * If multiple pairs
have the same key, the resulting map will contain the value from the last of those pairs.\n * Entries of the map
are iterated in the order they were specified.\n * @sample
samples.collections.Maps.Instantiation.mutableMapFromPairs\n * @sample
samples.collections.Maps.Instantiation.emptyMutableMap\n */\n\npublic fun <K, V> mutableMapOf(vararg pairs:
Pair<K, V>): MutableMap<K, V> =\n  LinkedHashMap<K, V>(mapCapacity(pairs.size)).apply { putAll(pairs)
}\n\n/**\n * Returns an empty new [HashMap].\n * @sample
samples.collections.Maps.Instantiation.emptyHashMap\n
*/\n\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline fun <K, V> hashMapOf(): HashMap<K, V>
= HashMap<K, V>()\n\n/**\n * Returns a new [HashMap] with the specified contents, given as a list of pairs\n *
where the first component is the key and the second is the value.\n * @sample
samples.collections.Maps.Instantiation.hashMapFromPairs\n */\n\npublic fun <K, V> hashMapOf(vararg pairs:
Pair<K, V>): HashMap<K, V> = HashMap<K, V>(mapCapacity(pairs.size)).apply { putAll(pairs) }\n\n/**\n *
Returns an empty new [LinkedHashMap].\n * @SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline

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fun <K, V> linkedMapOf(): LinkedHashMap<K, V> = LinkedHashMap<K, V>()\n\n/**\n * Returns a new
[LinkedHashMap] with the specified contents, given as a list of pairs\n * where the first component is the key and
the second is the value.\n *\n * If multiple pairs have the same key, the resulting map will contain the value from the
last of those pairs.\n *\n * Entries of the map are iterated in the order they were specified.\n *\n * @sample
samples.collections.Maps.Instantiation.linkedMapFromPairs\n */\npublic fun <K, V> linkedMapOf(vararg pairs:
Pair<K, V>): LinkedHashMap<K, V> = pairs.toMap(LinkedHashMap(mapCapacity(pairs.size)))\n\n/**\n * Builds
a new read-only [Map] by populating a [MutableMap] using the given [builderAction]\n * and returning a read-only
map with the same key-value pairs.\n *\n * The map passed as a receiver to the [builderAction] is valid only inside
that function.\n * Using it outside of the function produces an unspecified behavior.\n *\n * Entries of the map are
iterated in the order they were added by the [builderAction].\n *\n * @sample
samples.collections.Builders.Maps.buildMapSample\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <K, V>
buildMap(@BuilderInference builderAction: MutableMap<K, V>().->Unit): Map<K, V> {\n    contract {\n        callsInPlace(builderAction, InvocationKind.EXACTLY_ONCE)\n    }\n    return LinkedHashMap<K,
V>().apply(builderAction)\n}\n\n/**\n * Builds a new read-only [Map] by populating a [MutableMap] using the
given [builderAction]\n * and returning a read-only map with the same key-value pairs.\n *\n * The map passed as a
receiver to the [builderAction] is valid only inside that function.\n * Using it outside of the function produces an
unspecified behavior.\n *\n * [capacity] is used to hint the expected number of pairs added in the [builderAction].\n
*\n * Entries of the map are iterated in the order they were added by the [builderAction].\n *\n * @throws
IllegalArgumentException if the given [capacity] is negative.\n *\n * @sample
samples.collections.Builders.Maps.buildMapSample\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <K, V>
buildMap(capacity: Int, @BuilderInference builderAction: MutableMap<K, V>().->Unit): Map<K, V> {\n    contract {\n        callsInPlace(builderAction, InvocationKind.EXACTLY_ONCE)\n    }\n    checkBuilderCapacity(capacity)\n    return LinkedHashMap<K, V>(mapCapacity(capacity)).apply(builderAction)\n}\n\n/**\n * Calculate the initial
capacity of a map.\n */\n@PublishedApi\ninternal expect fun mapCapacity(expectedSize: Int): Int\n\n/**\n * Checks a collection builder function capacity argument.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@PublishedApi\ninternal expect fun
checkBuilderCapacity(capacity: Int)\n\n/**\n * Returns `true` if this map is not empty.\n */\n@kotlin.internal.InlineOnly\npublic inline fun <K, V> Map<out K, V>.isEmpty(): Boolean =
!isEmpty()\n\n/**\n * Returns `true` if this nullable map is either null or empty.\n *\n * @sample
samples.collections.Maps.Usage.mapIsNullOrEmpty\n */\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun <K, V> Map<out K,
V>?.isNullOrEmpty(): Boolean {\n    contract {\n        returns(false) implies (this@isNullOrEmpty != null)\n    }\n    return this == null || isEmpty()\n}\n\n/**\n * Returns the [Map] if its not `null`, or the empty [Map] otherwise.\n
*\n * @sample samples.collections.Maps.Usage.mapOrEmpty\n */\n@kotlin.internal.InlineOnly\npublic inline fun
<K, V> Map<K, V>?.orEmpty(): Map<K, V> = this ?: emptyMap()\n\n/**\n * Returns this map if it's not empty\n *
or the result of calling [defaultValue] function if the map is empty.\n *\n * @sample
samples.collections.Maps.Usage.mapIfEmpty\n */\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic
inline fun <M, R> M.ifEmpty(defaultValue: () -> R): R where M : Map<*, *>, M : R =\n    if (isEmpty())
defaultValue() else this\n\n/**\n * Checks if the map contains the given key.\n *\n * This method allows to use the
`x in map` syntax for checking whether an object is contained in the map.\n */\n@kotlin.internal.InlineOnly\npublic
inline operator fun <@kotlin.internal.OnlyInputTypes K, V> Map<out K, V>.contains(key: K): Boolean =
containsKey(key)\n\n/**\n * Returns the value corresponding to the given [key], or `null` if such a key is not present
in the map.\n */\n@kotlin.internal.InlineOnly\npublic inline operator fun <@kotlin.internal.OnlyInputTypes K, V>
Map<out K, V>.get(key: K): V? =\n    @Suppress("UNCHECKED_CAST") (this as Map<K,
V>).get(key)\n\n/**\n * Allows to use the index operator for storing values in a mutable map.\n */\n@kotlin.internal.InlineOnly\npublic inline operator fun <K, V> MutableMap<K, V>.set(key: K, value: V): Unit

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```

{\n  put(key, value)\n}\n\n**\n * Returns `true` if the map contains the specified [key].\n *\n * Allows to overcome type-safety restriction of `containsKey` that requires to pass a key of type `K`.\n
*\n@kotlin.internal.InlineOnly\npublic inline fun <@kotlin.internal.OnlyInputTypes K> Map<out K,
*>.containsKey(key: K): Boolean =\n  @Suppress("UNCHECKED_CAST") (this as Map<K,
*>).containsKey(key)\n\n**\n * Returns `true` if the map maps one or more keys to the specified [value].\n *\n * Allows to overcome type-safety restriction of `containsValue` that requires to pass a value of type `V`.\n *\n
@sample samples.collections.Maps.Usage.containsValue\n
*\n@Suppress("EXTENSION_SHADOWED_BY_MEMBER") // false warning, extension takes precedence in
some cases\n@kotlin.internal.InlineOnly\npublic inline fun <K, @kotlin.internal.OnlyInputTypes V> Map<K,
V>.containsValue(value: V): Boolean = this.containsValue(value)\n\n**\n * Removes the specified key and its
corresponding value from this map.\n *\n * @return the previous value associated with the key, or `null` if the key
was not present in the map.\n *\n * Allows to overcome type-safety restriction of `remove` that requires to pass a key
of type `K`.\n *\n@kotlin.internal.InlineOnly\npublic inline fun <@kotlin.internal.OnlyInputTypes K, V>
MutableMap<out K, V>.remove(key: K): V? =\n  @Suppress("UNCHECKED_CAST") (this as MutableMap<K,
V>).remove(key)\n\n**\n * Returns the key component of the map entry.\n *\n * This method allows to use
destructuring declarations when working with maps, for example:\n * ```\n * for ((key, value) in map) {\n *   // do
something with the key and the value\n * }\n * ```\n *\n@kotlin.internal.InlineOnly\npublic inline operator fun <K,
V> Map.Entry<K, V>.component1(): K = key\n\n**\n * Returns the value component of the map entry.\n *\n * This method allows to use destructuring declarations when working with maps, for example:\n * ```\n * for ((key,
value) in map) {\n *   // do something with the key and the value\n * }\n * ```\n
*\n@kotlin.internal.InlineOnly\npublic inline operator fun <K, V> Map.Entry<K, V>.component2(): V =
value\n\n**\n * Converts entry to [Pair] with key being first component and value being second.\n
*\n@kotlin.internal.InlineOnly\npublic inline fun <K, V> Map.Entry<K, V>.toPair(): Pair<K, V> = Pair(key,
value)\n\n**\n * Returns the value for the given key, or the result of the [defaultValue] function if there was no
entry for the given key.\n *\n * @sample samples.collections.Maps.Usage.getOrElse\n
*\n@kotlin.internal.InlineOnly\npublic inline fun <K, V> Map<K, V>.getOrElse(key: K, defaultValue: () -> V): V
= get(key) ?: defaultValue()\n\ninternal inline fun <K, V> Map<K, V>.getOrElseNullable(key: K, defaultValue: ()
-> V): V {\n  val value = get(key)\n  if (value == null && !containsKey(key)) {\n    return defaultValue()\n  }
else {\n    @Suppress("UNCHECKED_CAST")\n    return value as V\n  }\n}\n\n**\n * Returns the value
for the given [key] or throws an exception if there is no such key in the map.\n *\n * If the map was created by
[withDefault], resorts to its `defaultValue` provider function\n * instead of throwing an exception.\n *\n * @throws
NoSuchElementException when the map doesn't contain a value for the specified key and\n * no implicit default
value was provided for that map.\n *\n@SinceKotlin("1.1")\npublic fun <K, V> Map<K, V>.getValue(key: K): V
= getOrImplicitDefault(key)\n\n**\n * Returns the value for the given key. If the key is not found in the map, calls
the [defaultValue] function,\n * puts its result into the map under the given key and returns it.\n *\n * Note that the
operation is not guaranteed to be atomic if the map is being modified concurrently.\n *\n * @sample
samples.collections.Maps.Usage.getOrPut\n *\npublic inline fun <K, V> MutableMap<K, V>.getOrPut(key: K,
defaultValue: () -> V): V {\n  val value = get(key)\n  return if (value == null) {\n    val answer =
defaultValue()\n    put(key, answer)\n    answer\n  } else {\n    value\n  }\n}\n\n**\n * Returns an
[Iterator] over the entries in the [Map].\n *\n * @sample samples.collections.Maps.Usage.forOverEntries\n
*\n@kotlin.internal.InlineOnly\npublic inline operator fun <K, V> Map<out K, V>.iterator():
Iterator<Map.Entry<K, V>> = entries.iterator()\n\n**\n * Returns a [MutableIterator] over the mutable entries in
the [MutableMap].\n *\n *\n@kotlin.jvm.JvmName("mutableIterator")\n@kotlin.internal.InlineOnly\npublic
inline operator fun <K, V> MutableMap<K, V>.iterator(): MutableIterator<MutableMap.MutableEntry<K, V>> =
entries.iterator()\n\n**\n * Populates the given [destination] map with entries having the keys of this map and the
values obtained\n * by applying the [transform] function to each entry in this [Map].\n *\n@kotlin.internal.InlineOnly\npublic inline fun <K, V,
R, M : MutableMap<in K, in R>> Map<out K, V>.mapValuesTo(destination: M, transform: (Map.Entry<K, V>) ->
R): M {\n  return entries.associateByTo(destination, { it.key }, transform)\n}\n\n**\n * Populates the given

```

[destination] map with entries having the keys obtained by applying the [transform] function to each entry in this [Map] and the values of this map. In case if any two entries are mapped to the equal keys, the value of the latter one will overwrite the value associated with the former one.

```

public inline fun <K, V, R, M : MutableMap<in R, in V>> Map<out K, V>.mapKeysTo(destination: M, transform: (Map.Entry<K, V>) -> R): M {
    return entries.associateByTo(destination, transform, { it.value })
}

```

Puts all the given [pairs] into this [MutableMap] with the first component in the pair being the key and the second the value.

```

public fun <K, V> MutableMap<in K, in V>.putAll(pairs: Array<out Pair<K, V>>): Unit {
    for ((key, value) in pairs) {
        put(key, value)
    }
}

```

Puts all the elements of the given collection into this [MutableMap] with the first component in the pair being the key and the second the value.

```

public fun <K, V> MutableMap<in K, in V>.putAll(pairs: Iterable<Pair<K, V>>): Unit {
    for ((key, value) in pairs) {
        put(key, value)
    }
}

```

Puts all the elements of the given sequence into this [MutableMap] with the first component in the pair being the key and the second the value.

```

public fun <K, V> MutableMap<in K, in V>.putAll(pairs: Sequence<Pair<K, V>>): Unit {
    for ((key, value) in pairs) {
        put(key, value)
    }
}

```

Returns a new map with entries having the keys of this map and the values obtained by applying the [transform] function to each entry in this [Map]. The returned map preserves the entry iteration order of the original map.

```

@sample samples.collections.Maps.Transformations.mapValues
public inline fun <K, V, R> Map<out K, V>.mapValues(transform: (Map.Entry<K, V>) -> R): Map<K, R> {
    return mapValuesTo(LinkedHashMap<K, R>(mapCapacity(size)), transform) // .optimizeReadOnlyMap()
}

```

Returns a new Map with entries having the keys obtained by applying the [transform] function to each entry in this [Map] and the values of this map. In case if any two entries are mapped to the equal keys, the value of the latter one will overwrite the value associated with the former one. The returned map preserves the entry iteration order of the original map.

```

@sample samples.collections.Maps.Transformations.mapKeys
public inline fun <K, V, R> Map<out K, V>.mapKeys(transform: (Map.Entry<K, V>) -> R): Map<R, V> {
    return mapKeysTo(LinkedHashMap<R, V>(mapCapacity(size)), transform) // .optimizeReadOnlyMap()
}

```

Returns a map containing all key-value pairs with keys matching the given [predicate]. The returned map preserves the entry iteration order of the original map.

```

@sample samples.collections.Maps.Filtering.filterKeys
public inline fun <K, V> Map<out K, V>.filterKeys(predicate: (K) -> Boolean): Map<K, V> {
    val result = LinkedHashMap<K, V>()
    for (entry in this) {
        if (predicate(entry.key)) {
            result.put(entry.key, entry.value)
        }
    }
    return result
}

```

Returns a map containing all key-value pairs with values matching the given [predicate]. The returned map preserves the entry iteration order of the original map.

```

@sample samples.collections.Maps.Filtering.filterValues
public inline fun <K, V> Map<out K, V>.filterValues(predicate: (V) -> Boolean): Map<K, V> {
    val result = LinkedHashMap<K, V>()
    for (entry in this) {
        if (predicate(entry.value)) {
            result.put(entry.key, entry.value)
        }
    }
    return result
}

```

Appends all entries matching the given [predicate] into the mutable map given as [destination] parameter. @return the destination map.

```

@sample samples.collections.Maps.Filtering.filterTo
public inline fun <K, V, M : MutableMap<in K, in V>> Map<out K, V>.filterTo(destination: M, predicate: (Map.Entry<K, V>) -> Boolean): M {
    for (element in this) {
        if (predicate(element)) {
            destination.put(element.key, element.value)
        }
    }
    return destination
}

```

Returns a new map containing all key-value pairs matching the given [predicate]. The returned map preserves the entry iteration order of the original map.

```

@sample samples.collections.Maps.Filtering.filter
public inline fun <K, V> Map<out K, V>.filter(predicate: (Map.Entry<K, V>) -> Boolean): Map<K, V> {
    return filterTo(LinkedHashMap<K, V>(), predicate)
}

```

Appends all entries not matching the given [predicate] into the given [destination]. @return the destination map.

```

@sample samples.collections.Maps.Filtering.filterNotTo
public inline fun <K, V, M : MutableMap<in K, in V>> Map<out K, V>.filterNotTo(destination: M, predicate: (Map.Entry<K, V>) -> Boolean): M {
    for (element in this) {
        if (!predicate(element)) {
            destination.put(element.key, element.value)
        }
    }
    return destination
}

```

Returns a new map containing all key-value pairs not matching the given [predicate]. The returned map preserves the entry iteration order of the original map. @sample

```

samples.collections.Maps.Filtering.filterNot\n *^public inline fun <K, V> Map<out K, V>.filterNot(predicate:
(Map.Entry<K, V>) -> Boolean): Map<K, V> {\n  return filterNotTo(LinkedHashMap<K, V>(),
predicate)\n}\n\n/**\n * Returns a new map containing all key-value pairs from the given collection of pairs.\n *\n * The returned map preserves the entry iteration order of the original collection.\n *\n * If any of two pairs would have the same key the last one gets added to the map.\n *^public fun <K, V> Iterable<Pair<K, V>>.toMap(): Map<K, V>
{\n  if (this is Collection) {\n    return when (size) {\n      0 -> emptyMap()\n      1 -> mapOf(if (this is
List) this[0] else iterator().next())\n      else -> toMap(LinkedHashMap<K, V>(mapCapacity(size)))\n    }\n  }\n  return toMap(LinkedHashMap<K, V>()).optimizeReadOnlyMap()\n}\n\n/**\n * Populates and returns the
[destination] mutable map with key-value pairs from the given collection of pairs.\n *^public fun <K, V, M :
MutableMap<in K, in V>> Iterable<Pair<K, V>>.toMap(destination: M): M =\n  destination.apply {
putAll(this@toMap) }\n}\n\n/**\n * Returns a new map containing all key-value pairs from the given array of pairs.\n
*\n * The returned map preserves the entry iteration order of the original array.\n *\n * If any of two pairs would have
the same key the last one gets added to the map.\n *^public fun <K, V> Array<out Pair<K, V>>.toMap(): Map<K,
V> = when (size) {\n  0 -> emptyMap()\n  1 -> mapOf(this[0])\n  else -> toMap(LinkedHashMap<K,
V>(mapCapacity(size)))\n}\n\n/**\n * Populates and returns the [destination] mutable map with key-value pairs
from the given array of pairs.\n *^public fun <K, V, M : MutableMap<in K, in V>> Array<out Pair<K,
V>>.toMap(destination: M): M =\n  destination.apply { putAll(this@toMap) }\n}\n\n/**\n * Returns a new map
containing all key-value pairs from the given sequence of pairs.\n *\n * The returned map preserves the entry
iteration order of the original sequence.\n *\n * If any of two pairs would have the same key the last one gets added to
the map.\n *^public fun <K, V> Sequence<Pair<K, V>>.toMap(): Map<K, V> = toMap(LinkedHashMap<K,
V>()).optimizeReadOnlyMap()\n}\n\n/**\n * Populates and returns the [destination] mutable map with key-value pairs
from the given sequence of pairs.\n *^public fun <K, V, M : MutableMap<in K, in V>> Sequence<Pair<K,
V>>.toMap(destination: M): M =\n  destination.apply { putAll(this@toMap) }\n}\n\n/**\n * Returns a new read-only
map containing all key-value pairs from the original map.\n *\n * The returned map preserves the entry iteration
order of the original map.\n *^@SinceKotlin("1.1")\npublic fun <K, V> Map<out K, V>.toMap(): Map<K, V> =
when (size) {\n  0 -> emptyMap()\n  1 -> toSingletonMap()\n  else -> toMutableMap()\n}\n\n/**\n * Returns a
new mutable map containing all key-value pairs from the original map.\n *\n * The returned map preserves the entry
iteration order of the original map.\n *^@SinceKotlin("1.1")\npublic fun <K, V> Map<out K,
V>.toMutableMap(): MutableMap<K, V> = LinkedHashMap(this)\n}\n\n/**\n * Populates and returns the
[destination] mutable map with key-value pairs from the given map.\n *^@SinceKotlin("1.1")\npublic fun <K, V,
M : MutableMap<in K, in V>> Map<out K, V>.toMap(destination: M): M =\n  destination.apply {
putAll(this@toMap) }\n}\n\n/**\n * Creates a new read-only map by replacing or adding an entry to this map from a
given key-value [pair].\n *\n * The returned map preserves the entry iteration order of the original map.\n *\n * The
[pair] is iterated in the end if it has a unique key.\n *^public operator fun <K, V> Map<out K, V>.plus(pair:
Pair<K, V>): Map<K, V> =\n  if (this.isEmpty()) mapOf(pair) else LinkedHashMap(this).apply { put(pair.first,
pair.second) }\n}\n\n/**\n * Creates a new read-only map by replacing or adding entries to this map from a given
collection of key-value [pairs].\n *\n * The returned map preserves the entry iteration order of the original map.\n
*\n * Those [pairs] with unique keys are iterated in the end in the order of [pairs] collection.\n *^public operator fun <K,
V> Map<out K, V>.plus(pairs: Iterable<Pair<K, V>>): Map<K, V> =\n  if (this.isEmpty()) pairs.toMap() else
LinkedHashMap(this).apply { putAll(pairs) }\n}\n\n/**\n * Creates a new read-only map by replacing or adding entries
to this map from a given array of key-value [pairs].\n *\n * The returned map preserves the entry iteration order of
the original map.\n *\n * Those [pairs] with unique keys are iterated in the end in the order of [pairs] array.\n
*^public operator fun <K, V> Map<out K, V>.plus(pairs: Array<out Pair<K, V>>): Map<K, V> =\n  if (this.isEmpty())
pairs.toMap() else LinkedHashMap(this).apply { putAll(pairs) }\n}\n\n/**\n * Creates a new read-only map by
replacing or adding entries to this map from a given sequence of key-value [pairs].\n *\n * The returned map
preserves the entry iteration order of the original map.\n *\n * Those [pairs] with unique keys are iterated in the
end in the order of [pairs] sequence.\n *^public operator fun <K, V> Map<out K, V>.plus(pairs: Sequence<Pair<K,
V>>): Map<K, V> =\n  LinkedHashMap(this).apply { putAll(pairs) }.optimizeReadOnlyMap()\n}\n\n/**\n * Creates

```

a new read-only map by replacing or adding entries to this map from another [map].

`plus(map: Map<out K, V>): Map<K, V> =` `LinkedHashMap(this).apply { putAll(map) }`

`plusAssign(pair: Pair<K, V>) {` `put(pair.first, pair.second)`

`plusAssign(pairs: Iterable<Pair<K, V>>) {` `putAll(pairs)`

`plusAssign(pairs: Array<out Pair<K, V>>) {` `putAll(pairs)`

`plusAssign(pairs: Sequence<Pair<K, V>>) {` `putAll(pairs)`

`minus(key: K): Map<K, V> =` `this.toMutableMap().apply { minusAssign(key) }`

`minus(keys: Iterable<K>): Map<K, V> =` `this.toMutableMap().apply { minusAssign(keys) }`

`minus(keys: Array<out K>): Map<K, V> =` `this.toMutableMap().apply { minusAssign(keys) }`

`minus(keys: Sequence<K>): Map<K, V> =` `this.toMutableMap().apply { minusAssign(keys) }`

`minusAssign(key: K) {` `remove(key)`

`minusAssign(keys: Iterable<K>) {` `this.keys.removeAll(keys)`

`minusAssign(keys: Array<out K>) {` `this.keys.removeAll(keys)`

`minusAssign(keys: Sequence<K>) {` `this.keys.removeAll(keys)`

`optimizeReadOnlyMap() =` `when (size) { 0 -> emptyMap() 1 -> toSingletonMapOrSelf() else -> this }`

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```

@file:kotlin.jvm.JvmMultifileClass
@file:kotlin.jvm.JvmName("SetsKt")
@file:UseExperimental(kotlin.experimental.ExperimentalTypeInference::class)
package kotlin.collections
nimport

```

```

kotlin.contracts.*\n\ninternal object EmptySet : Set<Nothing>, Serializable {\n  private const val
serialVersionUID: Long = 3406603774387020532\n  override fun equals(other: Any?): Boolean = other is
Set<*> && other.isEmpty()\n  override fun hashCode(): Int = 0\n  override fun toString(): String = \"[]\"\n\n  override val size: Int get() = 0\n  override fun isEmpty(): Boolean = true\n  override fun contains(element:
Nothing): Boolean = false\n  override fun containsAll(elements: Collection<Nothing>): Boolean =
elements.isEmpty()\n\n  override fun iterator(): Iterator<Nothing> = EmptyIterator\n\n  private fun readResolve():
Any = EmptySet\n}\n\n/**\n * Returns an empty read-only set. The returned set is serializable (JVM).\n *
@sample samples.collections.Collections.Sets.emptyReadOnlySet\n */\npublic fun <T> emptySet(): Set<T> =
EmptySet\n\n/**\n * Returns a new read-only set with the given elements.\n * Elements of the set are iterated in the
order they were specified.\n * The returned set is serializable (JVM).\n * @sample
samples.collections.Collections.Sets.readOnlySet\n */\npublic fun <T> setOf(vararg elements: T): Set<T> = if
(elements.size > 0) elements.toSet() else emptySet()\n\n/**\n * Returns an empty read-only set. The returned set is
serializable (JVM).\n * @sample samples.collections.Collections.Sets.emptyReadOnlySet\n */\n@kotlin.internal.InlineOnly\npublic inline fun <T> setOf(): Set<T> = emptySet()\n\n/**\n * Returns an empty
new [MutableSet].\n * The returned set preserves the element iteration order.\n * @sample
samples.collections.Collections.Sets.emptyMutableSet\n */\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline fun <T> mutableSetOf(): MutableSet<T> =
LinkedHashSet()\n\n/**\n * Returns a new [MutableSet] with the given elements.\n * Elements of the set are
iterated in the order they were specified.\n * @sample samples.collections.Collections.Sets.mutableSet\n */\npublic
fun <T> mutableSetOf(vararg elements: T): MutableSet<T> =
elements.toCollection(LinkedHashSet(mapCapacity(elements.size)))\n\n/**\n * Returns an empty new [HashSet].
*\n */\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline fun <T> hashSetOf(): HashSet<T> =
HashSet()\n\n/**\n * Returns a new [HashSet] with the given elements. *\n */\npublic fun <T> hashSetOf(vararg elements:
T): HashSet<T> = elements.toCollection(HashSet(mapCapacity(elements.size)))\n\n/**\n * Returns an empty new
[LinkedHashSet].\n * @sample samples.collections.Collections.Sets.emptyLinkedHashSet\n */\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline fun <T> linkedSetOf(): LinkedHashSet<T>
= LinkedHashSet()\n\n/**\n * Returns a new [LinkedHashSet] with the given elements.\n * Elements of the set are
iterated in the order they were specified.\n * @sample samples.collections.Collections.Sets.linkedHashSet\n */\npublic
fun <T> linkedSetOf(vararg elements: T): LinkedHashSet<T> =
elements.toCollection(LinkedHashSet(mapCapacity(elements.size)))\n\n/**\n * Builds a new read-only [Set] by
populating a [MutableSet] using the given [builderAction]\n * and returning a read-only set with the same
elements.\n * The set passed as a receiver to the [builderAction] is valid only inside that function.\n * Using it
outside of the function produces an unspecified behavior.\n * Elements of the set are iterated in the order they
were added by the [builderAction].\n * @sample samples.collections.Builders.Sets.buildSetSample\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <E>
buildSet(@BuilderInference builderAction: MutableSet<E>.() -> Unit): Set<E> {\n  contract {
callsInPlace(builderAction, InvocationKind.EXACTLY_ONCE) }\n  return
LinkedHashSet<E>().apply(builderAction)\n}\n\n/**\n * Builds a new read-only [Set] by populating a [MutableSet]
using the given [builderAction]\n * and returning a read-only set with the same elements.\n * The set passed as a
receiver to the [builderAction] is valid only inside that function.\n * Using it outside of the function produces an
unspecified behavior.\n * [capacity] is used to hint the expected number of elements added in the
[builderAction].\n * Elements of the set are iterated in the order they were added by the [builderAction].\n *
@throws IllegalArgumentException if the given [capacity] is negative.\n * @sample
samples.collections.Builders.Sets.buildSetSample\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun <E>
buildSet(capacity: Int, @BuilderInference builderAction: MutableSet<E>.() -> Unit): Set<E> {\n  contract {
callsInPlace(builderAction, InvocationKind.EXACTLY_ONCE) }\n  checkBuilderCapacity(capacity)\n  return
LinkedHashSet<E>(mapCapacity(capacity)).apply(builderAction)\n}\n\n/**\n * Returns this Set if it's not `null` and

```

the empty set otherwise. `*\n@kotlin.internal.InlineOnly\npublic inline fun <T> Set<T>?.orEmpty(): Set<T> = this  
?: emptySet()\n\ninternal fun <T> Set<T>.optimizeReadOnlySet() = when (size) {\n 0 -> emptySet()\n 1 ->  
setOf(iterator().next())\n else -> this\n}\n",/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming  
Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the  
license/LICENSE.txt file.\n`

`*\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("StringsKt")\n@file:Suppress("PLATFORM_CLASS_MAPPED_TO_KOTLIN")\n\npackage kotlin.text\n\n/**\n * Parses the string as a signed [Byte]  
number and returns the result\n * or `null` if the string is not a valid representation of a number.\n`

`*\n@SinceKotlin("1.1")\npublic fun String.toByteArrayOrNull(): Byte? = toByteOrNull(radix = 10)\n\n/**\n * Parses  
the string as a signed [Byte] number and returns the result\n * or `null` if the string is not a valid representation of a  
number.\n * @throws IllegalArgumentException when [radix] is not a valid radix for string to number  
conversion.\n`

`*\n@SinceKotlin("1.1")\npublic fun String.toByteArrayOrNull(radix: Int): Byte? {\n val int =  
this.toIntOrNull(radix)?: return null\n if (int < Byte.MIN_VALUE || int > Byte.MAX_VALUE) return null\n  
return int.toByteArray()\n}\n\n/**\n * Parses the string as a [Short] number and returns the result\n * or `null` if the string  
is not a valid representation of a number.\n`

`*\n@SinceKotlin("1.1")\npublic fun String.toShortOrNull(): Short? =  
toShortOrNull(radix = 10)\n\n/**\n * Parses the string as a [Short] number and returns the result\n * or `null` if the  
string is not a valid representation of a number.\n * @throws IllegalArgumentException when [radix] is not a  
valid radix for string to number conversion.\n`

`*\n@SinceKotlin("1.1")\npublic fun String.toShortOrNull(radix:  
Int): Short? {\n val int = this.toIntOrNull(radix)?: return null\n if (int < Short.MIN_VALUE || int >  
Short.MAX_VALUE) return null\n return int.toShort()\n}\n\n/**\n * Parses the string as an [Int] number and  
returns the result\n * or `null` if the string is not a valid representation of a number.\n`

`*\n@SinceKotlin("1.1")\npublic fun String.toIntOrNull(): Int? = toIntOrNull(radix = 10)\n\n/**\n * Parses the  
string as an [Int] number and returns the result\n * or `null` if the string is not a valid representation of a number.\n * @throws IllegalArgumentException when [radix] is not a valid radix for string to number conversion.\n`

`*\n@SinceKotlin("1.1")\npublic fun String.toIntOrNull(radix: Int): Int? {\n checkRadix(radix)\n\n val length  
= this.length\n if (length == 0) return null\n\n val start: Int\n val isNegative: Boolean\n val limit: Int\n val  
firstChar = this[0]\n if (firstChar < '0') { // Possible leading sign\n if (length == 1) return null // non-digit  
(possible sign) only, no digits after\n\n start = 1\n\n if (firstChar == '-') {\n isNegative = true\n  
limit = Int.MIN_VALUE\n } else if (firstChar == '+') {\n isNegative = false\n limit = -  
Int.MAX_VALUE\n } else\n return null\n } else {\n start = 0\n isNegative = false\n limit  
= -Int.MAX_VALUE\n }\n\n val limitForMaxRadix = (-Int.MAX_VALUE) / 36\n\n var limitBeforeMul =  
limitForMaxRadix\n var result = 0\n for (i in start until length) {\n val digit = digitOf(this[i], radix)\n  
if (digit < 0) return null\n if (result < limitBeforeMul) {\n if (limitBeforeMul == limitForMaxRadix) {\n  
limitBeforeMul = limit / radix\n\n if (result < limitBeforeMul) {\n return null\n  
}\n } else {\n return null\n }\n }\n\n result *= radix\n\n if (result < limit + digit)  
return null\n\n result -= digit\n }\n\n return if (isNegative) result else -result\n}\n\n/**\n * Parses the string  
as a [Long] number and returns the result\n * or `null` if the string is not a valid representation of a number.\n`

`*\n@SinceKotlin("1.1")\npublic fun String.toLongOrNull(): Long? = toLongOrNull(radix = 10)\n\n/**\n * Parses  
the string as a [Long] number and returns the result\n * or `null` if the string is not a valid representation of a  
number.\n * @throws IllegalArgumentException when [radix] is not a valid radix for string to number  
conversion.\n`

`*\n@SinceKotlin("1.1")\npublic fun String.toLongOrNull(radix: Int): Long? {\n  
checkRadix(radix)\n\n val length = this.length\n if (length == 0) return null\n\n val start: Int\n val isNegative:  
Boolean\n val limit: Long\n\n val firstChar = this[0]\n if (firstChar < '0') { // Possible leading sign\n if  
(length == 1) return null // non-digit (possible sign) only, no digits after\n\n start = 1\n\n if (firstChar == '-')  
{\n isNegative = true\n limit = Long.MIN_VALUE\n } else if (firstChar == '+') {\n  
isNegative = false\n limit = -Long.MAX_VALUE\n } else\n return null\n } else {\n start =  
0\n isNegative = false\n limit = -Long.MAX_VALUE\n }\n\n val limitForMaxRadix = (-  
Long.MAX_VALUE) / 36\n\n var limitBeforeMul = limitForMaxRadix\n var result = 0L\n for (i in start until`

```

length) {\n    val digit = digitOf(this[i], radix)\n\n    if (digit < 0) return null\n    if (result < limitBeforeMul)\n    {\n        if (limitBeforeMul == limitForMaxRadix) {\n            limitBeforeMul = limit / radix\n\n            if\n            (result < limitBeforeMul) {\n                return null\n            }\n        } else {\n            return null\n        }\n    }\n\n    result *= radix\n\n    if (result < limit + digit) return null\n\n    result -= digit\n }\n\nreturn if (isNegative) result else -result\n}\n\n\ninternal fun numberFormatError(input: String): Nothing = throw\nNumberFormatException("Invalid number format: '$input'")\n\n"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that\n * can be found in the license/LICENSE.txt file.\n */\n\n@file:kotlin.jvm.JvmName("UnsignedKt")\n@file:UseExperimental(ExperimentalUnsignedTypes::class)\npackage kotlin\n\n@PublishedApi\ninternal fun uintCompare(v1: Int, v2: Int): Int = (v1 xor\nInt.MIN_VALUE).compareTo(v2 xor Int.MIN_VALUE)\n\n@PublishedApi\ninternal fun ulongCompare(v1: Long,\nv2: Long): Int = (v1 xor Long.MIN_VALUE).compareTo(v2 xor Long.MIN_VALUE)\n\n@PublishedApi\ninternal fun uintDivide(v1: UInt, v2: UInt): UInt = (v1.toLong() / v2.toLong()).toUInt()\n\n@PublishedApi\ninternal fun uintRemainder(v1: UInt, v2: UInt): UInt = (v1.toLong() % v2.toLong()).toUInt()\n\n// Division and remainder are based on Guava's UnsignedLongs implementation\n// Copyright 2011 The Guava Authors\n\n@PublishedApi\ninternal fun ulongDivide(v1: ULong, v2: ULong): ULong {\n    val dividend = v1.toLong()\n    val divisor = v2.toLong()\n    if (divisor < 0) { // i.e., divisor >= 2^63:\n        return if (v1 < v2)\n        ULong(0) else ULong(1)\n    }\n\n    // Optimization - use signed division if both dividend and divisor < 2^63\n    if (dividend >= 0) {\n        return ULong(dividend / divisor)\n    }\n\n    // Otherwise, approximate the quotient, check, and correct if necessary.\n    val quotient = ((dividend ushr 1) / divisor) shl 1\n    val rem = dividend - quotient * divisor\n    return ULong(quotient + if (ULong(rem) >= ULong(divisor)) 1 else 0)\n}\n\n@PublishedApi\ninternal fun ulongRemainder(v1: ULong, v2: ULong): ULong {\n    val dividend = v1.toLong()\n    val divisor = v2.toLong()\n    if (divisor < 0) { // i.e., divisor >= 2^63:\n        return if (v1 < v2) {\n            v1 // dividend < divisor\n        } else {\n            v1 - v2 // dividend >= divisor\n        }\n    }\n\n    // Optimization - use signed modulus if both dividend and divisor < 2^63\n    if (dividend >= 0) {\n        return ULong(dividend % divisor)\n    }\n\n    // Otherwise, approximate the quotient, check, and correct if necessary.\n    val quotient = ((dividend ushr 1) / divisor) shl 1\n    val rem = dividend - quotient * divisor\n    return ULong(rem - if (ULong(rem) >= ULong(divisor)) divisor else 0)\n}\n\n@PublishedApi\ninternal fun doubleToUInt(v: Double): UInt = when {\n    v.isNaN() -> 0u\n    v <= UInt.MIN_VALUE.toDouble() -> UInt.MIN_VALUE\n    v >= UInt.MAX_VALUE.toDouble() -> UInt.MAX_VALUE\n    v <= Int.MAX_VALUE -> v.toInt().toUInt()\n    else -> (v - Int.MAX_VALUE).toInt().toUInt() + Int.MAX_VALUE.toUInt()\n    // Int.MAX_VALUE < v < UInt.MAX_VALUE\n}\n\n@PublishedApi\ninternal fun doubleToULong(v: Double): ULong = when {\n    v.isNaN() -> 0u\n    v <= ULong.MIN_VALUE.toDouble() -> ULong.MIN_VALUE\n    v >= ULong.MAX_VALUE.toDouble() -> ULong.MAX_VALUE\n    v < Long.MAX_VALUE -> v.toLong().toULong()\n    // Real values from Long.MAX_VALUE to (Long.MAX_VALUE + 1) are not representable in Double, so don't handle them.\n    else -> (v - 9223372036854775808.0).toLong().toULong() + 9223372036854775808uL\n    // Long.MAX_VALUE + 1 < v < ULong.MAX_VALUE\n}\n\n@PublishedApi\ninternal fun uintToDouble(v: Int): Double = (v and Int.MAX_VALUE).toDouble() + (v ushr 31 shl 30).toDouble() * 2\n\n@PublishedApi\ninternal fun ulongToDouble(v: Long): Double = (v ushr 11).toDouble() * 2048 + (v and 2047)\n\n\ninternal fun ulongToString(v: Long): String = ulongToString(v, 10)\n\ninternal fun ulongToString(v: Long, base: Int): String {\n    if (v >= 0) return v.toString(base)\n\n    var quotient = ((v ushr 1) / base) shl 1\n    var rem = v - quotient * base\n    if (rem >= base) {\n        rem -= base\n        quotient += 1\n    }\n    return quotient.toString(base) + rem.toString(base)\n}\n\n"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the\n * license/LICENSE.txt file.\n */\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("CollectionsKt")\n\npackage kotlin.collections\n\n/**\n * Given an [iterator] function constructs an [Iterable] instance that returns values through

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the [Iterator] provided by that function.
@sample samples.collections.Iterables.Building.iterable
@kotlin.internal.InlineOnly
public inline fun <T> Iterable(crossinline iterator: () -> Iterator<T>): Iterable<T>
= object : Iterable<T> {
    override fun iterator(): Iterator<T> = iterator()
}
/**
 * A wrapper over another [Iterable] (or any other object that can produce an [Iterator]) that returns
 * an indexing iterator.
 */
internal class IndexingIterable<out T>(private val iteratorFactory: () -> Iterator<T>) : Iterable<IndexedValue<T>> {
    override fun iterator(): Iterator<IndexedValue<T>> = IndexingIterator(iteratorFactory())
}
/**
 * Returns the size of this iterable if it is known, or `null` otherwise.
 */
@PublishedApi
internal fun <T> Iterable<T>.collectionSizeOrNull(): Int? = if (this is Collection<*>) this.size else null
/**
 * Returns the size of this iterable if it is known, or the specified [default] value otherwise.
 */
@PublishedApi
internal fun <T> Iterable<T>.collectionSizeOrDefault(default: Int): Int = if (this is Collection<*>) this.size else default
/**
 * Returns true when it's safe to convert this collection to a set without changing contains method behavior.
 */
private fun <T> Collection<T>.safeToConvertToSet() = size > 2 && this is ArrayList
/**
 * Converts this collection to a set, when it's worth so and it doesn't change contains method behavior.
 */
internal fun <T> Iterable<T>.convertToSetForSetOperationWith(source: Iterable<T>): Collection<T> =
    when (this) {
        is Set -> this
        is Collection -> when {
            source is Collection && source.size < 2 -> this
            else -> if (this.safeToConvertToSet()) toHashSet() else this
        }
        else -> toHashSet()
    }
/**
 * Converts this collection to a set, when it's worth so and it doesn't change contains method behavior.
 */
internal fun <T> Iterable<T>.convertToSetForSetOperation(): Collection<T> =
    when (this) {
        is Set -> this
        is Collection -> if (this.safeToConvertToSet()) toHashSet() else this
        else -> toHashSet()
    }
/**
 * Returns a single list of all elements from all collections in the given collection.
 */
@sample
samples.collections.Iterables.Operations.flattenIterable
public fun <T> Iterable<Iterable<T>>.flatten(): List<T> {
    val result = ArrayList<T>()
    for (element in this) {
        result.addAll(element)
    }
    return result
}
/**
 * Returns a pair of lists, where *first* list is built from the first values of each pair from this collection,
 * *second* list is built from the second values of each pair from this collection.
 */
@sample
samples.collections.Iterables.Operations.unzipIterable
public fun <T, R> Iterable<Pair<T, R>>.unzip(): Pair<List<T>, List<R>> {
    val expectedSize = collectionSizeOrDefault(10)
    val listT = ArrayList<T>(expectedSize)
    val listR = ArrayList<R>(expectedSize)
    for (pair in this) {
        listT.add(pair.first)
        listR.add(pair.second)
    }
    return listT to listR
}
/*
 * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.
 * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.
 */
@file:kotlin.jvm.JvmMultifileClass
@file:kotlin.jvm.JvmName("SequencesKt")
package kotlin.sequences
/**
 * Given an [iterator] function constructs a [Sequence] that returns values through the [Iterator]
 * provided by that function.
 * The values are evaluated lazily, and the sequence is potentially infinite.
 */
@sample samples.collections.Sequences.Building.sequenceFromIterator
@kotlin.internal.InlineOnly
public inline fun <T> Sequence(crossinline iterator: () -> Iterator<T>): Sequence<T> = object : Sequence<T> {
    override fun iterator(): Iterator<T> = iterator()
}
/**
 * Creates a sequence that returns all elements from this iterator. The sequence is constrained to be iterated only once.
 */
@sample samples.collections.Sequences.Building.sequenceFromIterator
public fun <T> Iterator<T>.asSequence(): Sequence<T> = Sequence { this }.constrainOnce()
/**
 * Creates a sequence that returns the specified values.
 */
@sample samples.collections.Sequences.Building.sequenceOfValues
public fun <T> sequenceOf(vararg elements: T): Sequence<T> = if (elements.isEmpty()) emptySequence() else elements.asSequence()
/**
 * Returns an empty sequence.
 */
public fun <T> emptySequence(): Sequence<T> = EmptySequence
private object EmptySequence : Sequence<Nothing>, DropTakeSequence<Nothing> {
    override fun iterator(): Iterator<Nothing> = EmptyIterator
    override fun drop(n: Int) = EmptySequence
    override fun take(n: Int) = EmptySequence
}
/**
 * Returns this sequence if it's not `null` and the empty sequence otherwise.
 */
@sample samples.collections.Sequences.Usages.sequenceOrNull
@SinceKotlin("1.3")
@kotlin.internal.InlineOnly
public inline fun <T> Sequence<T>?.orEmpty():

```



Sequence<T> = this ?: emptySequence()\n\n/\*\*\n \* Returns a sequence that iterates through the elements either of this sequence\n \* or, if this sequence turns out to be empty, of the sequence returned by [defaultValue] function.\n \*\n \* @sample samples.collections.Sequences.Usage.sequenceIfEmpty\n \*/\n @SinceKotlin("1.3")\npublic fun <T> Sequence<T>.isEmpty(defaultValue: () -> Sequence<T>): Sequence<T> = sequence {\n val iterator = this@ifEmpty.iterator()\n if (iterator.hasNext()) {\n yieldAll(iterator)\n } else {\n yieldAll(defaultValue())\n }\n}\n\n/\*\*\n \* Returns a sequence of all elements from all sequences in this sequence.\n \*\n \* The operation is `_intermediate_` and `_stateless_`.\n \*/\npublic fun <T> Sequence<Sequence<T>>.flatten(): Sequence<T> = flatten { it.iterator() }\n\n/\*\*\n \* Returns a sequence of all elements from all iterables in this sequence.\n \*\n \* The operation is `_intermediate_` and `_stateless_`.\n \*/\n @kotlin.jvm.JvmName("flattenSequenceOfIterable")\npublic fun <T> Sequence<Iterable<T>>.flatten(): Sequence<T> = flatten { it.iterator() }\n\nprivate fun <T, R> Sequence<T>.flatten(iterator: (T) -> Iterator<R>): Sequence<R> {\n if (this is TransformingSequence<\*, \*>) {\n return (this as TransformingSequence<\*, T>).flatten(iterator)\n }\n return FlatteningSequence(this, { it }, iterator)\n}\n\n/\*\*\n \* Returns a pair of lists, where\n \* \*first\* list is built from the first values of each pair from this sequence,\n \* \*second\* list is built from the second values of each pair from this sequence.\n \*\n \* The operation is `_terminal_`.\n \*/\npublic fun <T, R> Sequence<Pair<T, R>>.unzip(): Pair<List<T>, List<R>> {\n val listT = ArrayList<T>()\n val listR = ArrayList<R>()\n for (pair in this) {\n listT.add(pair.first)\n listR.add(pair.second)\n }\n return listT to listR\n}\n\n/\*\*\n \* A sequence that returns the values from the underlying [sequence] that either match or do not match\n \* the specified [predicate].\n \*\n \* @param sendWhen If `true`, values for which the predicate returns `true` are returned. Otherwise,\n \* values for which the predicate returns `false` are returned\n \*/\ninternal class FilteringSequence<T>(\n private val sequence: Sequence<T>,\n private val sendWhen: Boolean = true,\n private val predicate: (T) -> Boolean)\n : Sequence<T> {\n override fun iterator(): Iterator<T> = object : Iterator<T> {\n val iterator = sequence.iterator()\n var nextState: Int = -1 // -1 for unknown, 0 for done, 1 for continue\n var nextItem: T? = null\n\n private fun calcNext() {\n while (iterator.hasNext()) {\n val item = iterator.next()\n if (predicate(item) == sendWhen) {\n nextItem = item\n nextState = 1\n return\n }\n }\n nextState = 0\n }\n\n override fun next(): T {\n if (nextState == -1)\n calcNext()\n if (nextState == 0)\n throw NoSuchElementException()\n val result = nextItem\n nextItem = null\n nextState = -1\n\n @Suppress("UNCHECKED\_CAST")\n return result as T\n }\n\n override fun hasNext(): Boolean {\n if (nextState == -1)\n calcNext()\n return nextState == 1\n }\n }\n}\n\n/\*\*\n \* A sequence which returns the results of applying the given [transformer] function to the values\n \* in the underlying [sequence].\n \*/\ninternal class TransformingSequence<T, R>(\n constructor(private val sequence: Sequence<T>, private val transformer: (T) -> R)\n : Sequence<R> {\n override fun iterator(): Iterator<R> = object : Iterator<R> {\n val iterator = sequence.iterator()\n\n override fun next(): R {\n return transformer(iterator.next())\n }\n\n override fun hasNext(): Boolean {\n return iterator.hasNext()\n }\n }\n\n internal fun <E> flatten(iterator: (R) -> Iterator<E>): Sequence<E> {\n return FlatteningSequence<T, R, E>(sequence, transformer, iterator)\n }\n}\n\n/\*\*\n \* A sequence which returns the results of applying the given [transformer] function to the values\n \* in the underlying [sequence], where the transformer function takes the index of the value in the underlying\n \* sequence along with the value itself.\n \*/\ninternal class TransformingIndexedSequence<T, R>(\n constructor(private val sequence: Sequence<T>, private val transformer: (Int, T) -> R)\n : Sequence<R> {\n override fun iterator(): Iterator<R> = object : Iterator<R> {\n val iterator = sequence.iterator()\n var index = 0\n\n override fun next(): R {\n return transformer(checkIndexOverflow(index++), iterator.next())\n }\n\n override fun hasNext(): Boolean {\n return iterator.hasNext()\n }\n }\n}\n\n/\*\*\n \* A sequence which combines values from the underlying [sequence] with their indices and returns them as\n \* [IndexedValue] objects.\n \*/\ninternal class IndexingSequence<T>(\n constructor(private val sequence: Sequence<T>)\n : Sequence<IndexedValue<T>> {\n override fun iterator(): Iterator<IndexedValue<T>> = object : Iterator<IndexedValue<T>> {\n val iterator = sequence.iterator()\n var index = 0\n\n override fun next(): IndexedValue<T> {\n return IndexedValue(checkIndexOverflow(index++), iterator.next())\n }\n }\n}\n



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sequence.iterator()\n    var nextState: Int = -1 // -1 for unknown, 0 for done, 1 for continue\n    var nextItem: T?\n= null\n    private fun calcNext() {\n        if (iterator.hasNext()) {\n            val item = iterator.next()\n            if (predicate(item)) {\n                nextState = 1\n                nextItem = item\n                return\n            }\n            nextState = 0\n        }\n        override fun next(): T {\n            if (nextState == -1)\n                calcNext() // will change nextState\n            if (nextState == 0)\n                throw NoSuchElementException()\n            @Suppress("UNCHECKED_CAST")\n            val result = nextItem as T\n            // Clean next to avoid keeping\n            reference on yielded instance\n            nextItem = null\n            nextState = -1\n            return result\n        }\n        override fun hasNext(): Boolean {\n            if (nextState == -1)\n                calcNext() // will change nextState\n            return nextState == 1\n        }\n    }\n}\n\n/**\n * A sequence that skips the specified number of values from the\n underlying [sequence] and returns\n * all values after that.\n */\ninternal class DropSequence<T>(\n    private val\n sequence: Sequence<T>,\n    private val count: Int\n) : Sequence<T>, DropTakeSequence<T> {\n    init {\n        require(count >= 0) { \"count must be non-negative, but was $count.\" }\n    }\n    override fun drop(n: Int):\n Sequence<T> = (count + n).let { n1 -> if (n1 < 0) DropSequence(this, n) else DropSequence(sequence, n1) }\n    override fun take(n: Int): Sequence<T> = (count + n).let { n1 -> if (n1 < 0) TakeSequence(this, n) else\n SubSequence(sequence, count, n1) }\n    override fun iterator(): Iterator<T> = object : Iterator<T> {\n        val\n iterator = sequence.iterator()\n        var left = count\n        // Shouldn't be called from constructor to avoid\n        premature iteration\n        private fun drop() {\n            while (left > 0 && iterator.hasNext()) {\n                iterator.next()\n                left--\n            }\n        }\n        override fun next(): T {\n            drop()\n            return\n            iterator.next()\n        }\n        override fun hasNext(): Boolean {\n            drop()\n            return iterator.hasNext()\n        }\n    }\n}\n\n/**\n * A sequence that skips the values from the underlying [sequence] while the given\n [predicate] returns `true` and returns\n * all values after that.\n */\ninternal class\n DropWhileSequence<T>(\n    private val sequence: Sequence<T>,\n    private val predicate: (T) ->\n Boolean\n) : Sequence<T> {\n    override fun iterator(): Iterator<T> = object : Iterator<T> {\n        val iterator =\n sequence.iterator()\n        var dropState: Int = -1 // -1 for not dropping, 1 for nextItem, 0 for normal iteration\n        var nextItem: T? = null\n        private fun drop() {\n            while (iterator.hasNext()) {\n                val item =\n                iterator.next()\n                if (!predicate(item)) {\n                    nextItem = item\n                    dropState = 1\n                }\n                return\n            }\n            dropState = 0\n        }\n        override fun next(): T {\n            if\n            (dropState == -1)\n                drop()\n            if (dropState == 1) {\n                @Suppress(\"UNCHECKED_CAST\")\n                val result = nextItem as T\n                nextItem = null\n                dropState = 0\n                return result\n            }\n            return iterator.next()\n        }\n        override fun\n hasNext(): Boolean {\n            if (dropState == -1)\n                drop()\n            return dropState == 1 ||\n            iterator.hasNext()\n        }\n    }\n}\n\ninternal class DistinctSequence<T, K>(\n    private val source: Sequence<T>,\n    private val keySelector: (T) -> K\n) : Sequence<T> {\n    override fun iterator(): Iterator<T> =\n DistinctIterator(source.iterator(), keySelector)\n}\n\nprivate class DistinctIterator<T, K>(\n    private val source:\n Iterator<T>,\n    private val keySelector: (T) -> K\n) : AbstractIterator<T>() {\n    private val observed =\n HashSet<K>()\n    override fun computeNext() {\n        while (source.hasNext()) {\n            val next =\n            source.next()\n            val key = keySelector(next)\n            if (observed.add(key)) {\n                setNext(next)\n                return\n            }\n        }\n        done()\n    }\n}\n\nprivate class GeneratorSequence<T : Any>(\n    private val\n getInitialValue: () -> T?,\n    private val getNextValue: (T) -> T?\n) : Sequence<T> {\n    override fun iterator():\n Iterator<T> = object : Iterator<T> {\n        var nextItem: T? = null\n        var nextState: Int = -2 // -2 for initial\n        unknown, -1 for next unknown, 0 for done, 1 for continue\n        private fun calcNext() {\n            nextItem = if\n            (nextState == -2) getInitialValue() else getNextValue(nextItem!!)\n            nextState = if (nextItem == null) 0 else\n            1\n        }\n        override fun next(): T {\n            if (nextState < 0)\n                calcNext()\n            if (nextState\n            == 0)\n                throw NoSuchElementException()\n            val result = nextItem as T\n            // Do not clean\n            nextItem (to avoid keeping reference on yielded instance) -- need to keep state for getNextValue\n            nextState\n            = -1\n            return result\n        }\n        override fun hasNext(): Boolean {\n            if (nextState < 0)\n                calcNext()\n            return nextState == 1\n        }\n    }\n}\n\n/**\n * Returns a wrapper sequence that provides\n values of this sequence, but ensures it can be iterated only one time.\n */\n * The operation is _intermediate_ and

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_stateless_.\n *\n * [IllegalStateException] is thrown on iterating the returned sequence from the second time.\n *\n
*\npublic fun <T> Sequence<T>.constrainOnce(): Sequence<T> {\n // as? does not work in js\n //return this as?
ConstrainedOnceSequence<T> ?: ConstrainedOnceSequence(this)\n return if (this is
ConstrainedOnceSequence<T>) this else ConstrainedOnceSequence(this)\n}\n\n/**\n * Returns a sequence which
invokes the function to calculate the next value on each iteration until the function returns `null`.\n *\n * The
returned sequence is constrained to be iterated only once.\n *\n * @see constrainOnce\n * @see
kotlin.sequences.sequence\n *\n * @sample samples.collections.Sequences.Building.generateSequence\n
*\npublic
fun <T : Any> generateSequence(nextFunction: () -> T?): Sequence<T> {\n return
GeneratorSequence(nextFunction, { nextFunction() }).constrainOnce()\n}\n\n/**\n * Returns a sequence defined by
the starting value [seed] and the function [nextFunction],\n * which is invoked to calculate the next value based on
the previous one on each iteration.\n *\n * The sequence produces values until it encounters first `null` value.\n *
If [seed] is `null`, an empty sequence is produced.\n *\n * The sequence can be iterated multiple times, each time
starting with [seed].\n *\n * @see kotlin.sequences.sequence\n *\n * @sample
samples.collections.Sequences.Building.generateSequenceWithSeed\n
*\n@kotlin.internal.LowPriorityInOverloadResolution\npublic fun <T : Any> generateSequence(seed: T?,
nextFunction: (T) -> T?): Sequence<T> =\n if (seed == null)\n EmptySequence\n else\n
GeneratorSequence({ seed }, nextFunction)\n}\n\n/**\n * Returns a sequence defined by the function [seedFunction],
which is invoked to produce the starting value,\n * and the [nextFunction], which is invoked to calculate the next
value based on the previous one on each iteration.\n *\n * The sequence produces values until it encounters first
`null` value.\n * If [seedFunction] returns `null`, an empty sequence is produced.\n *\n * The sequence can be
iterated multiple times.\n *\n * @see kotlin.sequences.sequence\n *\n * @sample
samples.collections.Sequences.Building.generateSequenceWithLazySeed\n
*\npublic fun <T : Any>
generateSequence(seedFunction: () -> T?, nextFunction: (T) -> T?): Sequence<T> =\n
GeneratorSequence(seedFunction, nextFunction)\n}\n\n"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin
Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be
found in the license/LICENSE.txt file.\n
*\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("PreconditionsKt")\n\npackage
kotlin\n\nimport kotlin.contracts.contract\n\n/**\n * Throws an [IllegalArgumentException] if the [value] is false.\n
*\n * @sample samples.misc.Preconditions.failRequireWithLazyMessage\n
*\n@kotlin.internal.InlineOnly\npublic
inline fun require(value: Boolean): Unit {\n contract {\n returns() implies value\n }\n require(value) {
"Failed requirement." }\n}\n\n/**\n * Throws an [IllegalArgumentException] with the result of calling
[lazyMessage] if the [value] is false.\n *\n * @sample samples.misc.Preconditions.failRequireWithLazyMessage\n
*\n@kotlin.internal.InlineOnly\npublic inline fun require(value: Boolean, lazyMessage: () -> Any): Unit {\n
contract {\n returns() implies value\n }\n if (!value) {\n val message = lazyMessage()\n throw
IllegalArgumentException(message.toString())\n }\n}\n\n/**\n * Throws an [IllegalArgumentException] if the
[value] is null. Otherwise returns the not null value.\n *\n * @kotlin.internal.InlineOnly\npublic inline fun <T : Any>
requireNotNull(value: T?): T {\n contract {\n returns() implies (value != null)\n }\n return
requireNotNull(value) { "Required value was null." }\n}\n\n/**\n * Throws an [IllegalArgumentException] with
the result of calling [lazyMessage] if the [value] is null. Otherwise\n * returns the not null value.\n *\n * @sample
samples.misc.Preconditions.failRequireWithLazyMessage\n
*\n@kotlin.internal.InlineOnly\npublic inline fun <T :
Any> requireNotNull(value: T?, lazyMessage: () -> Any): T {\n contract {\n returns() implies (value !=
null)\n }\n\n if (value == null) {\n val message = lazyMessage()\n throw
IllegalArgumentException(message.toString())\n } else {\n return value\n }\n}\n\n/**\n * Throws an
[IllegalStateException] if the [value] is false.\n *\n * @sample
samples.misc.Preconditions.failCheckWithLazyMessage\n
*\n@kotlin.internal.InlineOnly\npublic inline fun
check(value: Boolean): Unit {\n contract {\n returns() implies value\n }\n check(value) { "Check failed."
}\n}\n\n/**\n * Throws an [IllegalStateException] with the result of calling [lazyMessage] if the [value] is false.\n
*\n * @sample samples.misc.Preconditions.failCheckWithLazyMessage\n
*\n@kotlin.internal.InlineOnly\npublic

```

```

inline fun check(value: Boolean, lazyMessage: () -> Any): Unit {
    contract {
        returns() implies value
    }
    if (!value) {
        val message = lazyMessage()
        throw IllegalStateException(message.toString())
    }
}

/**
 * Throws an [IllegalStateException] if the [value] is null. Otherwise
 * returns the not null value.
 *
 * @sample samples.misc.Preconditions.failCheckWithLazyMessage
 */
@kotlin.internal.InlineOnly
public inline fun <T> checkNotNull(value: T?): T {
    contract {
        returns() implies (value != null)
    }
    return checkNotNull(value) { "Required value was null." }
}

/**
 * Throws an [IllegalStateException] with
 * the result of calling [lazyMessage] if the [value] is null. Otherwise
 * returns the not null value.
 *
 * @sample
 * samples.misc.Preconditions.failCheckWithLazyMessage
 */
@kotlin.internal.InlineOnly
public inline fun <T :
Any> checkNotNull(value: T?, lazyMessage: () -> Any): T {
    contract {
        returns() implies (value != null)
    }
    if (value == null) {
        val message = lazyMessage()
        throw
IllegalStateException(message.toString())
    } else {
        return value
    }
}

/**
 * Throws an
 [IllegalStateException] with the given [message].
 *
 * @sample samples.misc.Preconditions.failWithError
 */
@kotlin.internal.InlineOnly
public inline fun error(message: Any): Nothing = throw
IllegalStateException(message.toString())

/**
 * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming
Language contributors.
 * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.
 */
package kotlin.collections

// NOTE: THIS FILE IS AUTO-GENERATED
by the GenerateStandardLib.kt
// See: https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib
import kotlin.js
import primitiveArrayConcat
import withType
import kotlin.ranges.contains
import kotlin.ranges.reversed

/**
 * Returns an element at the given [index] or throws an
[IndexOutOfBoundsException] if the [index] is out of bounds of this array.
 *
 * @sample
samples.collections.Collections.Elements.elementAt

public actual fun <T> Array<out T>.elementAt(index:
Int): T {
    return elementAtOrElse(index) { throw IndexOutOfBoundsException("index: $index, size: $size") }
}

/**
 * Returns an element at the given [index] or throws an [IndexOutOfBoundsException] if the [index] is
out of bounds of this array.
 *
 * @sample samples.collections.Collections.Elements.elementAt

public actual fun ByteArray.elementAt(index: Int): Byte {
    return elementAtOrElse(index) { throw
IndexOutOfBoundsException("index: $index, size: $size") }
}

/**
 * Returns an element at the given
[index] or throws an [IndexOutOfBoundsException] if the [index] is out of bounds of this array.
 *
 * @sample
samples.collections.Collections.Elements.elementAt

public actual fun ShortArray.elementAt(index: Int): Short
{
    return elementAtOrElse(index) { throw IndexOutOfBoundsException("index: $index, size: $size") }
}

/**
 * Returns an element at the given [index] or throws an [IndexOutOfBoundsException] if the [index] is
out of bounds of this array.
 *
 * @sample samples.collections.Collections.Elements.elementAt

public actual fun IntArray.elementAt(index: Int): Int {
    return elementAtOrElse(index) { throw
IndexOutOfBoundsException("index: $index, size: $size") }
}

/**
 * Returns an element at the given
[index] or throws an [IndexOutOfBoundsException] if the [index] is out of bounds of this array.
 *
 * @sample
samples.collections.Collections.Elements.elementAt

public actual fun LongArray.elementAt(index: Int): Long
{
    return elementAtOrElse(index) { throw IndexOutOfBoundsException("index: $index, size: $size") }
}

/**
 * Returns an element at the given [index] or throws an [IndexOutOfBoundsException] if the [index] is
out of bounds of this array.
 *
 * @sample samples.collections.Collections.Elements.elementAt

public actual fun FloatArray.elementAt(index: Int): Float {
    return elementAtOrElse(index) { throw
IndexOutOfBoundsException("index: $index, size: $size") }
}

/**
 * Returns an element at the given
[index] or throws an [IndexOutOfBoundsException] if the [index] is out of bounds of this array.
 *
 * @sample
samples.collections.Collections.Elements.elementAt

public actual fun DoubleArray.elementAt(index: Int):
Double {
    return elementAtOrElse(index) { throw IndexOutOfBoundsException("index: $index, size: $size") }
}

/**
 * Returns an element at the given [index] or throws an [IndexOutOfBoundsException] if the [index] is
out of bounds of this array.
 *
 * @sample samples.collections.Collections.Elements.elementAt

public actual fun BooleanArray.elementAt(index: Int): Boolean {
    return elementAtOrElse(index) { throw
IndexOutOfBoundsException("index: $index, size: $size") }
}

/**
 * Returns an element at the given
[index] or throws an [IndexOutOfBoundsException] if the [index] is out of bounds of this array.
 *
 * @sample

```

```

samples.collections.Collections.Elements.elementAt\n */\npublic actual fun CharArray.elementAt(index: Int): Char
{\n    return elementAtOrElse(index) { throw IndexOutOfBoundsException("index: $index, size: $size")\n
}\n}\n\n/**\n * Returns a [List] that wraps the original array.\n */\npublic actual fun <T> Array<out T>.asList():
List<T> {\n    return ArrayList<T>(this.unsafeCast<Array<Any?>>())\n}\n\n/**\n * Returns a [List] that wraps the
original array.\n */\n@kotlin.internal.InlineOnly\npublic actual inline fun ByteArray.asList(): List<Byte> {\n
return this.unsafeCast<Array<Byte>>().asList()\n}\n\n/**\n * Returns a [List] that wraps the original array.\n
*/\n@kotlin.internal.InlineOnly\npublic actual inline fun ShortArray.asList(): List<Short> {\n    return
this.unsafeCast<Array<Short>>().asList()\n}\n\n/**\n * Returns a [List] that wraps the original array.\n
*/\n@kotlin.internal.InlineOnly\npublic actual inline fun IntArray.asList(): List<Int> {\n    return
this.unsafeCast<Array<Int>>().asList()\n}\n\n/**\n * Returns a [List] that wraps the original array.\n
*/\n@kotlin.internal.InlineOnly\npublic actual inline fun LongArray.asList(): List<Long> {\n    return
this.unsafeCast<Array<Long>>().asList()\n}\n\n/**\n * Returns a [List] that wraps the original array.\n
*/\n@kotlin.internal.InlineOnly\npublic actual inline fun FloatArray.asList(): List<Float> {\n    return
this.unsafeCast<Array<Float>>().asList()\n}\n\n/**\n * Returns a [List] that wraps the original array.\n
*/\n@kotlin.internal.InlineOnly\npublic actual inline fun DoubleArray.asList(): List<Double> {\n    return
this.unsafeCast<Array<Double>>().asList()\n}\n\n/**\n * Returns a [List] that wraps the original array.\n
*/\n@kotlin.internal.InlineOnly\npublic actual inline fun BooleanArray.asList(): List<Boolean> {\n    return
this.unsafeCast<Array<Boolean>>().asList()\n}\n\n/**\n * Returns a [List] that wraps the original array.\n
*/\npublic actual fun CharArray.asList(): List<Char> {\n    return object : AbstractList<Char>(), RandomAccess {\n
        override val size: Int get() = this@asList.size\n        override fun isEmpty(): Boolean = this@asList.isEmpty()\n
        override fun contains(element: Char): Boolean = this@asList.contains(element)\n        override fun get(index: Int):
Char {\n            AbstractList.checkElementIndex(index, size)\n            return this@asList[index]\n        }\n
        override fun indexOf(element: Char): Int {\n            if ((element as Any?) !is Char) return -1\n            return
this@asList.indexOf(element)\n        }\n        override fun lastIndexOf(element: Char): Int {\n            if ((element as
Any?) !is Char) return -1\n            return this@asList.lastIndexOf(element)\n        }\n    }\n}\n\n/**\n * Returns
`true` if the two specified arrays are *deeply* equal to one another,\n * i.e. contain the same number of the same
elements in the same order.\n * \n * If two corresponding elements are nested arrays, they are also compared
deeply.\n * If any of arrays contains itself on any nesting level the behavior is undefined.\n * \n * The elements of
other types are compared for equality with the [equals][Any.equals] function.\n * For floating point numbers it
means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n
*/\n@SinceKotlin("1.1")\n@library("arrayDeepEquals")\npublic actual infix fun <T> Array<out
T>.contentDeepEquals(other: Array<out T>): Boolean {\n    definedExternally\n}\n\n/**\n * Returns a hash code
based on the contents of this array as if it is [List].\n * Nested arrays are treated as lists too.\n * \n * If any of arrays
contains itself on any nesting level the behavior is undefined.\n
*/\n@SinceKotlin("1.1")\n@library("arrayDeepHashCode")\npublic actual fun <T> Array<out
T>.contentDeepHashCode(): Int {\n    definedExternally\n}\n\n/**\n * Returns a string representation of the
contents of this array as if it is a [List].\n * Nested arrays are treated as lists too.\n * \n * If any of arrays contains
itself on any nesting level that reference\n * is rendered as `[...]` to prevent recursion.\n * \n * @sample
samples.collections.Arrays.ContentOperations.contentDeepToString\n
*/\n@SinceKotlin("1.1")\n@library("arrayDeepToString")\npublic actual fun <T> Array<out
T>.contentDeepToString(): String {\n    definedExternally\n}\n\n/**\n * Returns `true` if the two specified arrays
are *structurally* equal to one another,\n * i.e. contain the same number of the same elements in the same order.\n
*/\n * The elements are compared for equality with the [equals][Any.equals] function.\n * For floating point numbers
it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n
*/\n@SinceKotlin("1.1")\n@library("arrayEquals")\npublic actual infix fun <T> Array<out
T>.contentEquals(other: Array<out T>): Boolean {\n    definedExternally\n}\n\n/**\n * Returns `true` if the two
specified arrays are *structurally* equal to one another,\n * i.e. contain the same number of the same elements in the
same order.\n * \n * The elements are compared for equality with the [equals][Any.equals] function.\n * For floating

```

point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n

```
*\n@SinceKotlin("1.1")\n@library("arrayEquals")\npublic actual infix fun ByteArray.contentEquals(other: ByteArray): Boolean {\n    definedExternally\n}\n\n/**\n * Returns `true` if the two specified arrays are *structurally* equal to one another,\n * i.e. contain the same number of the same elements in the same order.\n * \n * The elements are compared for equality with the [equals][Any.equals] function.\n * For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n
```

```
*\n@SinceKotlin("1.1")\n@library("arrayEquals")\npublic actual infix fun ShortArray.contentEquals(other: ShortArray): Boolean {\n    definedExternally\n}\n\n/**\n * Returns `true` if the two specified arrays are *structurally* equal to one another,\n * i.e. contain the same number of the same elements in the same order.\n * \n * The elements are compared for equality with the [equals][Any.equals] function.\n * For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n
```

```
*\n@SinceKotlin("1.1")\n@library("arrayEquals")\npublic actual infix fun IntArray.contentEquals(other: IntArray): Boolean {\n    definedExternally\n}\n\n/**\n * Returns `true` if the two specified arrays are *structurally* equal to one another,\n * i.e. contain the same number of the same elements in the same order.\n * \n * The elements are compared for equality with the [equals][Any.equals] function.\n * For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n
```

```
*\n@SinceKotlin("1.1")\n@library("arrayEquals")\npublic actual infix fun LongArray.contentEquals(other: LongArray): Boolean {\n    definedExternally\n}\n\n/**\n * Returns `true` if the two specified arrays are *structurally* equal to one another,\n * i.e. contain the same number of the same elements in the same order.\n * \n * The elements are compared for equality with the [equals][Any.equals] function.\n * For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n
```

```
*\n@SinceKotlin("1.1")\n@library("arrayEquals")\npublic actual infix fun FloatArray.contentEquals(other: FloatArray): Boolean {\n    definedExternally\n}\n\n/**\n * Returns `true` if the two specified arrays are *structurally* equal to one another,\n * i.e. contain the same number of the same elements in the same order.\n * \n * The elements are compared for equality with the [equals][Any.equals] function.\n * For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n
```

```
*\n@SinceKotlin("1.1")\n@library("arrayEquals")\npublic actual infix fun DoubleArray.contentEquals(other: DoubleArray): Boolean {\n    definedExternally\n}\n\n/**\n * Returns `true` if the two specified arrays are *structurally* equal to one another,\n * i.e. contain the same number of the same elements in the same order.\n * \n * The elements are compared for equality with the [equals][Any.equals] function.\n * For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n
```

```
*\n@SinceKotlin("1.1")\n@library("arrayEquals")\npublic actual infix fun BooleanArray.contentEquals(other: BooleanArray): Boolean {\n    definedExternally\n}\n\n/**\n * Returns `true` if the two specified arrays are *structurally* equal to one another,\n * i.e. contain the same number of the same elements in the same order.\n * \n * The elements are compared for equality with the [equals][Any.equals] function.\n * For floating point numbers it means that `NaN` is equal to itself and `-0.0` is not equal to `0.0`.\n
```

```
*\n@SinceKotlin("1.1")\n@library("arrayEquals")\npublic actual infix fun CharArray.contentEquals(other: CharArray): Boolean {\n    definedExternally\n}\n\n/**\n * Returns a hash code based on the contents of this array as if it is [List].\n *\n@SinceKotlin("1.1")\n@library("arrayHashCode")\npublic actual fun <T> Array<out T>.contentHashCode(): Int {\n    definedExternally\n}\n\n/**\n * Returns a hash code based on the contents of this array as if it is [List].\n *\n@SinceKotlin("1.1")\n@library("arrayHashCode")\npublic actual fun ByteArray.contentHashCode(): Int {\n    definedExternally\n}\n\n/**\n * Returns a hash code based on the contents of this array as if it is [List].\n *\n@SinceKotlin("1.1")\n@library("arrayHashCode")\npublic actual fun ShortArray.contentHashCode(): Int {\n    definedExternally\n}\n\n/**\n * Returns a hash code based on the contents of this array as if it is [List].\n *\n@SinceKotlin("1.1")\n@library("arrayHashCode")\npublic actual fun IntArray.contentHashCode(): Int {\n    definedExternally\n}\n\n/**\n * Returns a hash code based on the contents of this array as if it is [List].\n *\n@SinceKotlin("1.1")\n@library("arrayHashCode")\npublic actual fun LongArray.contentHashCode(): Int {\n    definedExternally\n}\n\n/**\n * Returns a hash code based on the contents
```

of this array as if it is [List].\n \* \n @SinceKotlin("1.1")\n @library("arrayHashCode")\n public actual fun FloatArray.contentHashCode(): Int {\n definedExternally\n }\n /\*\*\n \* Returns a hash code based on the contents of this array as if it is [List].\n \* \n @SinceKotlin("1.1")\n @library("arrayHashCode")\n public actual fun DoubleArray.contentHashCode(): Int {\n definedExternally\n }\n /\*\*\n \* Returns a hash code based on the contents of this array as if it is [List].\n \* \n @SinceKotlin("1.1")\n @library("arrayHashCode")\n public actual fun BooleanArray.contentHashCode(): Int {\n definedExternally\n }\n /\*\*\n \* Returns a hash code based on the contents of this array as if it is [List].\n \* \n @SinceKotlin("1.1")\n @library("arrayHashCode")\n public actual fun CharArray.contentHashCode(): Int {\n definedExternally\n }\n /\*\*\n \* Returns a string representation of the contents of the specified array as if it is [List].\n \* \n \* @sample samples.collections.Arrays.ContentOperations.contentToString\n \* \n @SinceKotlin("1.1")\n @library("arrayToString")\n public actual fun <T> Array<out T>.contentToString(): String {\n definedExternally\n }\n /\*\*\n \* Returns a string representation of the contents of the specified array as if it is [List].\n \* \n \* @sample samples.collections.Arrays.ContentOperations.contentToString\n \* \n @SinceKotlin("1.1")\n @library("arrayToString")\n public actual fun ByteArray.contentToString(): String {\n definedExternally\n }\n /\*\*\n \* Returns a string representation of the contents of the specified array as if it is [List].\n \* \n \* @sample samples.collections.Arrays.ContentOperations.contentToString\n \* \n @SinceKotlin("1.1")\n @library("arrayToString")\n public actual fun ShortArray.contentToString(): String {\n definedExternally\n }\n /\*\*\n \* Returns a string representation of the contents of the specified array as if it is [List].\n \* \n \* @sample samples.collections.Arrays.ContentOperations.contentToString\n \* \n @SinceKotlin("1.1")\n @library("arrayToString")\n public actual fun IntArray.contentToString(): String {\n definedExternally\n }\n /\*\*\n \* Returns a string representation of the contents of the specified array as if it is [List].\n \* \n \* @sample samples.collections.Arrays.ContentOperations.contentToString\n \* \n @SinceKotlin("1.1")\n @library("arrayToString")\n public actual fun LongArray.contentToString(): String {\n definedExternally\n }\n /\*\*\n \* Returns a string representation of the contents of the specified array as if it is [List].\n \* \n \* @sample samples.collections.Arrays.ContentOperations.contentToString\n \* \n @SinceKotlin("1.1")\n @library("arrayToString")\n public actual fun FloatArray.contentToString(): String {\n definedExternally\n }\n /\*\*\n \* Returns a string representation of the contents of the specified array as if it is [List].\n \* \n \* @sample samples.collections.Arrays.ContentOperations.contentToString\n \* \n @SinceKotlin("1.1")\n @library("arrayToString")\n public actual fun DoubleArray.contentToString(): String {\n definedExternally\n }\n /\*\*\n \* Returns a string representation of the contents of the specified array as if it is [List].\n \* \n \* @sample samples.collections.Arrays.ContentOperations.contentToString\n \* \n @SinceKotlin("1.1")\n @library("arrayToString")\n public actual fun BooleanArray.contentToString(): String {\n definedExternally\n }\n /\*\*\n \* Returns a string representation of the contents of the specified array as if it is [List].\n \* \n \* @sample samples.collections.Arrays.ContentOperations.contentToString\n \* \n @SinceKotlin("1.1")\n @library("arrayToString")\n public actual fun CharArray.contentToString(): String {\n definedExternally\n }\n /\*\*\n \* Copies this array or its subrange into the [destination] array and returns that array.\n \* \n \* It's allowed to pass the same array in the [destination] and even specify the subrange so that it overlaps with the destination range.\n \* \n \* @param destination the array to copy to.\n \* @param destinationOffset the position in the [destination] array to copy to, 0 by default.\n \* @param startIndex the beginning (inclusive) of the subrange to copy, 0 by default.\n \* @param endIndex the end (exclusive) of the subrange to copy, size of this array by default.\n \* \n \* @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this array indices or when `startIndex > endIndex`.\n \* \n \* @throws IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array starting at the specified [destinationOffset],\n \* \n \* or when that index is out of the [destination] array indices range.\n \* \n \* @return the [destination] array.\n \* \n @SinceKotlin("1.3")\n @kotlin.internal.InlineOnly\n @Suppress("ACTUAL\_FUNCTION\_WITH\_DEFAULT\_ARGUMENTS")\n public actual inline fun <T> Array<out T>.copyInto(destination: Array<T>, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size): Array<T> {\n arrayCopy(this, destination, destinationOffset,



startIndex, endIndex)\n return destination\n}\n\n/\*\*\n \* Copies this array or its subrange into the [destination] array and returns that array.\n \* \n \* It's allowed to pass the same array in the [destination] and even specify the subrange so that it overlaps with the destination range.\n \* \n \* @param destination the array to copy to.\n \* @param destinationOffset the position in the [destination] array to copy to, 0 by default.\n \* @param startIndex the beginning (inclusive) of the subrange to copy, 0 by default.\n \* @param endIndex the end (exclusive) of the subrange to copy, size of this array by default.\n \* \n \* @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this array indices or when `startIndex > endIndex`.\n \* @throws IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array starting at the specified [destinationOffset],\n \* or when that index is out of the [destination] array indices range.\n \* \n \* @return the [destination] array.\n

```
*\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\npublic actual inline fun ByteArray.copyInto(destination: ByteArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size): ByteArray {\n    arrayCopy(this.unsafeCast<Array<Byte>>(), destination.unsafeCast<Array<Byte>>(), destinationOffset, startIndex, endIndex)\n    return destination\n}\n\n/**\n * Copies this array or its subrange into the [destination] array and returns that array.\n * \n * It's allowed to pass the same array in the [destination] and even specify the subrange so that it overlaps with the destination range.\n * \n * @param destination the array to copy to.\n * @param destinationOffset the position in the [destination] array to copy to, 0 by default.\n * @param startIndex the beginning (inclusive) of the subrange to copy, 0 by default.\n * @param endIndex the end (exclusive) of the subrange to copy, size of this array by default.\n * \n * @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this array indices or when `startIndex > endIndex`.\n * @throws IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array starting at the specified [destinationOffset],\n * or when that index is out of the [destination] array indices range.\n * \n * @return the [destination] array.\n
```

```
*\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\npublic actual inline fun ShortArray.copyInto(destination: ShortArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size): ShortArray {\n    arrayCopy(this.unsafeCast<Array<Short>>(), destination.unsafeCast<Array<Short>>(), destinationOffset, startIndex, endIndex)\n    return destination\n}\n\n/**\n * Copies this array or its subrange into the [destination] array and returns that array.\n * \n * It's allowed to pass the same array in the [destination] and even specify the subrange so that it overlaps with the destination range.\n * \n * @param destination the array to copy to.\n * @param destinationOffset the position in the [destination] array to copy to, 0 by default.\n * @param startIndex the beginning (inclusive) of the subrange to copy, 0 by default.\n * @param endIndex the end (exclusive) of the subrange to copy, size of this array by default.\n * \n * @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this array indices or when `startIndex > endIndex`.\n * @throws IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array starting at the specified [destinationOffset],\n * or when that index is out of the [destination] array indices range.\n * \n * @return the [destination] array.\n
```

```
*\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\npublic actual inline fun IntArray.copyInto(destination: IntArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size): IntArray {\n    arrayCopy(this.unsafeCast<Array<Int>>(), destination.unsafeCast<Array<Int>>(), destinationOffset, startIndex, endIndex)\n    return destination\n}\n\n/**\n * Copies this array or its subrange into the [destination] array and returns that array.\n * \n * It's allowed to pass the same array in the [destination] and even specify the subrange so that it overlaps with the destination range.\n * \n * @param destination the array to copy to.\n * @param destinationOffset the position in the [destination] array to copy to, 0 by default.\n * @param startIndex the beginning (inclusive) of the subrange to copy, 0 by default.\n * @param endIndex the end (exclusive) of the subrange to copy, size of this array by default.\n * \n * @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this array indices or when `startIndex > endIndex`.\n * @throws IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array starting at the specified [destinationOffset],\n * or when that index is out of the
```

```

[destination] array indices range.\n * \n * @return the [destination] array.\n
*\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT
_ARGUMENTS")\npublic actual inline fun LongArray.copyInto(destination: LongArray, destinationOffset: Int = 0,
startIndex: Int = 0, endIndex: Int = size): LongArray {\n    arrayCopy(this.unsafeCast<Array<Long>>(),
destination.unsafeCast<Array<Long>>(), destinationOffset, startIndex, endIndex)\n    return destination\n}\n\n/**\n
* Copies this array or its subrange into the [destination] array and returns that array.\n * \n * It's allowed to pass the
same array in the [destination] and even specify the subrange so that it overlaps with the destination range.\n * \n *
@param destination the array to copy to.\n * @param destinationOffset the position in the [destination] array to
copy to, 0 by default.\n * @param startIndex the beginning (inclusive) of the subrange to copy, 0 by default.\n *
@param endIndex the end (exclusive) of the subrange to copy, size of this array by default.\n * \n * @throws
IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this
array indices or when `startIndex > endIndex`.\n * @throws IndexOutOfBoundsException when the subrange
doesn't fit into the [destination] array starting at the specified [destinationOffset],\n * or when that index is out of the
[destination] array indices range.\n * \n * @return the [destination] array.\n
*\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT
_ARGUMENTS")\npublic actual inline fun FloatArray.copyInto(destination: FloatArray, destinationOffset: Int = 0,
startIndex: Int = 0, endIndex: Int = size): FloatArray {\n    arrayCopy(this.unsafeCast<Array<Float>>(),
destination.unsafeCast<Array<Float>>(), destinationOffset, startIndex, endIndex)\n    return destination\n}\n\n/**\n
* Copies this array or its subrange into the [destination] array and returns that array.\n * \n * It's allowed to pass the
same array in the [destination] and even specify the subrange so that it overlaps with the destination range.\n * \n *
@param destination the array to copy to.\n * @param destinationOffset the position in the [destination] array to
copy to, 0 by default.\n * @param startIndex the beginning (inclusive) of the subrange to copy, 0 by default.\n *
@param endIndex the end (exclusive) of the subrange to copy, size of this array by default.\n * \n * @throws
IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this
array indices or when `startIndex > endIndex`.\n * @throws IndexOutOfBoundsException when the subrange
doesn't fit into the [destination] array starting at the specified [destinationOffset],\n * or when that index is out of the
[destination] array indices range.\n * \n * @return the [destination] array.\n
*\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT
_ARGUMENTS")\npublic actual inline fun DoubleArray.copyInto(destination: DoubleArray, destinationOffset: Int
= 0, startIndex: Int = 0, endIndex: Int = size): DoubleArray {\n    arrayCopy(this.unsafeCast<Array<Double>>(),
destination.unsafeCast<Array<Double>>(), destinationOffset, startIndex, endIndex)\n    return
destination\n}\n\n/**\n * Copies this array or its subrange into the [destination] array and returns that array.\n * \n *
It's allowed to pass the same array in the [destination] and even specify the subrange so that it overlaps with the
destination range.\n * \n * @param destination the array to copy to.\n * @param destinationOffset the position in the
[destination] array to copy to, 0 by default.\n * @param startIndex the beginning (inclusive) of the subrange to copy,
0 by default.\n * @param endIndex the end (exclusive) of the subrange to copy, size of this array by default.\n * \n *
@throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of
range of this array indices or when `startIndex > endIndex`.\n * @throws IndexOutOfBoundsException when the
subrange doesn't fit into the [destination] array starting at the specified [destinationOffset],\n * or when that index is
out of the [destination] array indices range.\n * \n * @return the [destination] array.\n
*\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT
_ARGUMENTS")\npublic actual inline fun BooleanArray.copyInto(destination: BooleanArray, destinationOffset:
Int = 0, startIndex: Int = 0, endIndex: Int = size): BooleanArray {\n    arrayCopy(this.unsafeCast<Array<Boolean>>(),
destination.unsafeCast<Array<Boolean>>(), destinationOffset,
startIndex, endIndex)\n    return destination\n}\n\n/**\n * Copies this array or its subrange into the [destination]
array and returns that array.\n * \n * It's allowed to pass the same array in the [destination] and even specify the
subrange so that it overlaps with the destination range.\n * \n * @param destination the array to copy to.\n *
@param destinationOffset the position in the [destination] array to copy to, 0 by default.\n * @param startIndex the

```

beginning (inclusive) of the subrange to copy, 0 by default.  
 @param endIndex the end (exclusive) of the subrange to copy, size of this array by default.  
 @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this array indices or when `startIndex > endIndex`.  
 @throws IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array starting at the specified [destinationOffset], or when that index is out of the [destination] array indices range.  
 @return the [destination] array.

```
*\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\npublic actual inline fun CharArray.copyInto(destination: CharArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size): CharArray {\n    arrayCopy(this.unsafeCast<Array<Char>>(), destination.unsafeCast<Array<Char>>(), destinationOffset, startIndex, endIndex)\n    return destination\n}\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample
```

```
samples.collections.Arrays.CopyOfOperations.copyOf\n *\n@Suppress("ACTUAL_WITHOUT_EXPECT", "NOTHING_TO_INLINE")\npublic actual inline fun <T> Array<out T>.copyOf(): Array<T> {\n    return this.asDynamic().slice()\n}\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample\n samples.collections.Arrays.CopyOfOperations.copyOf\n *\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline fun ByteArray.copyOf(): ByteArray {\n    return this.asDynamic().slice()\n}\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample
```

```
samples.collections.Arrays.CopyOfOperations.copyOf\n *\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline fun ShortArray.copyOf(): ShortArray {\n    return this.asDynamic().slice()\n}\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample
```

```
samples.collections.Arrays.CopyOfOperations.copyOf\n *\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline fun IntArray.copyOf(): IntArray {\n    return this.asDynamic().slice()\n}\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample\n samples.collections.Arrays.CopyOfOperations.copyOf\n *\npublic actual fun LongArray.copyOf(): LongArray {\n    return withType("LongArray",
```

```
this.asDynamic().slice())\n}\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample\n samples.collections.Arrays.CopyOfOperations.copyOf\n *\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline fun FloatArray.copyOf(): FloatArray {\n    return this.asDynamic().slice()\n}\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample
```

```
samples.collections.Arrays.CopyOfOperations.copyOf\n *\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline fun DoubleArray.copyOf(): DoubleArray {\n    return this.asDynamic().slice()\n}\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample
```

```
samples.collections.Arrays.CopyOfOperations.copyOf\n *\npublic actual fun BooleanArray.copyOf(): BooleanArray {\n    return withType("BooleanArray", this.asDynamic().slice())\n}\n\n/**\n * Returns new array which is a copy of the original array.\n * \n * @sample\n samples.collections.Arrays.CopyOfOperations.copyOf\n *\npublic actual fun CharArray.copyOf(): CharArray {\n    return withType("CharArray",
```

```
this.asDynamic().slice())\n}\n\n/**\n * Returns new array which is a copy of the original array, resized to the given [newSize].\n * The copy is either truncated or padded at the end with zero values if necessary.\n * - If [newSize] is less than the size of the original array, the copy array is truncated to the [newSize].\n * - If [newSize] is greater than the size of the original array, the extra elements in the copy array are filled with zero values.\n * \n * @sample
```

```
samples.collections.Arrays.CopyOfOperations.resizedPrimitiveCopyOf\n *\npublic actual fun
```

```
ByteArray.copyOf(newSize: Int): ByteArray {\n    require(newSize >= 0) { "Invalid new array size: $newSize." }\n    return fillFrom(this, ByteArray(newSize))\n}\n\n/**\n * Returns new array which is a copy of the original array, resized to the given [newSize].\n * The copy is either truncated or padded at the end with zero values if necessary.\n * \n * - If [newSize] is less than the size of the original array, the copy array is truncated to the [newSize].\n * - If [newSize] is greater than the size of the original array, the extra elements in the copy array are filled with zero values.\n * \n * @sample\n samples.collections.Arrays.CopyOfOperations.resizedPrimitiveCopyOf\n *\npublic actual fun ShortArray.copyOf(newSize: Int): ShortArray {\n    require(newSize >= 0) { "Invalid new array size: $newSize." }\n    return fillFrom(this, ShortArray(newSize))\n}\n\n/**\n * Returns new array which is a
```

copy of the original array, resized to the given [newSize].\n \* The copy is either truncated or padded at the end with zero values if necessary.\n \* - If [newSize] is less than the size of the original array, the copy array is truncated to the [newSize].\n \* - If [newSize] is greater than the size of the original array, the extra elements in the copy array are filled with zero values.\n \* \n \* @sample

samples.collections.Arrays.CopyOfOperations.resizedPrimitiveCopyOf\n \* \npublic actual fun

```
IntArray.copyOf(newSize: Int): IntArray {\n    require(newSize >= 0) { \"Invalid new array size: $newSize.\" }\n    return fillFrom(this, IntArray(newSize))\n}\n\n/**\n * Returns new array which is a copy of the original array, resized to the given [newSize].\n * The copy is either truncated or padded at the end with zero values if necessary.\n * - If [newSize] is less than the size of the original array, the copy array is truncated to the [newSize].\n * - If [newSize] is greater than the size of the original array, the extra elements in the copy array are filled with zero values.\n * \n * @sample samples.collections.Arrays.CopyOfOperations.resizedPrimitiveCopyOf\n * \npublic actual fun
```

```
LongArray.copyOf(newSize: Int): LongArray {\n    require(newSize >= 0) { \"Invalid new array size: $newSize.\" }\n    return withType(\"LongArray\", arrayCopyResize(this, newSize, 0L))\n}\n\n/**\n * Returns new array which is a copy of the original array, resized to the given [newSize].\n * The copy is either truncated or padded at the end with zero values if necessary.\n * - If [newSize] is less than the size of the original array, the copy array is truncated to the [newSize].\n * - If [newSize] is greater than the size of the original array, the extra elements in the copy array are filled with zero values.\n * \n * @sample
```

samples.collections.Arrays.CopyOfOperations.resizedPrimitiveCopyOf\n \* \npublic actual fun

```
FloatArray.copyOf(newSize: Int): FloatArray {\n    require(newSize >= 0) { \"Invalid new array size: $newSize.\" }\n    return fillFrom(this, FloatArray(newSize))\n}\n\n/**\n * Returns new array which is a copy of the original array, resized to the given [newSize].\n * The copy is either truncated or padded at the end with zero values if necessary.\n * - If [newSize] is less than the size of the original array, the copy array is truncated to the [newSize].\n * - If [newSize] is greater than the size of the original array, the extra elements in the copy array are filled with zero values.\n * \n * @sample samples.collections.Arrays.CopyOfOperations.resizedPrimitiveCopyOf\n * \npublic actual fun
```

```
DoubleArray.copyOf(newSize: Int): DoubleArray {\n    require(newSize >= 0) { \"Invalid new array size: $newSize.\" }\n    return fillFrom(this, DoubleArray(newSize))\n}\n\n/**\n * Returns new array which is a copy of the original array, resized to the given [newSize].\n * The copy is either truncated or padded at the end with `false` values if necessary.\n * - If [newSize] is less than the size of the original array, the copy array is truncated to the [newSize].\n * - If [newSize] is greater than the size of the original array, the extra elements in the copy array are filled with `false` values.\n * \n * @sample
```

samples.collections.Arrays.CopyOfOperations.resizedPrimitiveCopyOf\n \* \npublic actual fun

```
BooleanArray.copyOf(newSize: Int): BooleanArray {\n    require(newSize >= 0) { \"Invalid new array size: $newSize.\" }\n    return withType(\"BooleanArray\", arrayCopyResize(this, newSize, false))\n}\n\n/**\n * Returns new array which is a copy of the original array, resized to the given [newSize].\n * The copy is either truncated or padded at the end with null char (`\u0000`) values if necessary.\n * - If [newSize] is less than the size of the original array, the copy array is truncated to the [newSize].\n * - If [newSize] is greater than the size of the original array, the extra elements in the copy array are filled with null char (`\u0000`) values.\n * \n * @sample
```

samples.collections.Arrays.CopyOfOperations.resizedPrimitiveCopyOf\n \* \npublic actual fun

```
CharArray.copyOf(newSize: Int): CharArray {\n    require(newSize >= 0) { \"Invalid new array size: $newSize.\" }\n    return withType(\"CharArray\", fillFrom(this, CharArray(newSize)))\n}\n\n/**\n * Returns new array which is a copy of the original array, resized to the given [newSize].\n * The copy is either truncated or padded at the end with `null` values if necessary.\n * - If [newSize] is less than the size of the original array, the copy array is truncated to the [newSize].\n * - If [newSize] is greater than the size of the original array, the extra elements in the copy array are filled with `null` values.\n * \n * @sample
```

samples.collections.Arrays.CopyOfOperations.resizingCopyOf\n \* \npublic actual fun

```
<T> Array<out T>.copyOf(newSize: Int): Array<T?> {\n    require(newSize >= 0) { \"Invalid new array size: $newSize.\" }\n    return arrayCopyResize(this, newSize, null)\n}\n\n/**\n * Returns a new array which is a copy of the specified range of the original array.\n * \n * @sample
```

```

* @param fromIndex the start of the range (inclusive), must be in `0..array.size` \n * @param toIndex the end of the
range (exclusive), must be in `fromIndex..array.size` \n
*\n@Suppress("ACTUAL_WITHOUT_EXPECT")\npublic actual fun <T> Array<out
T>.copyOfRange(fromIndex: Int, toIndex: Int): Array<T> {\n  AbstractList.checkRangeIndexes(fromIndex,
toIndex, size)\n  return this.asDynamic().slice(fromIndex, toIndex)\n}\n\n/**\n * Returns a new array which is a
copy of the specified range of the original array.\n * \n * @param fromIndex the start of the range (inclusive), must
be in `0..array.size` \n * @param toIndex the end of the range (exclusive), must be in `fromIndex..array.size` \n
*\npublic actual fun ByteArray.copyOfRange(fromIndex: Int, toIndex: Int): ByteArray {\n
AbstractList.checkRangeIndexes(fromIndex, toIndex, size)\n  return this.asDynamic().slice(fromIndex,
toIndex)\n}\n\n/**\n * Returns a new array which is a copy of the specified range of the original array.\n * \n *
@param fromIndex the start of the range (inclusive), must be in `0..array.size` \n * @param toIndex the end of the
range (exclusive), must be in `fromIndex..array.size` \n *\npublic actual fun ShortArray.copyOfRange(fromIndex:
Int, toIndex: Int): ShortArray {\n  AbstractList.checkRangeIndexes(fromIndex, toIndex, size)\n  return
this.asDynamic().slice(fromIndex, toIndex)\n}\n\n/**\n * Returns a new array which is a copy of the specified range
of the original array.\n * \n * @param fromIndex the start of the range (inclusive), must be in `0..array.size` \n *
@param toIndex the end of the range (exclusive), must be in `fromIndex..array.size` \n *\npublic actual fun
IntArray.copyOfRange(fromIndex: Int, toIndex: Int): IntArray {\n  AbstractList.checkRangeIndexes(fromIndex,
toIndex, size)\n  return this.asDynamic().slice(fromIndex, toIndex)\n}\n\n/**\n * Returns a new array which is a
copy of the specified range of the original array.\n * \n * @param fromIndex the start of the range (inclusive), must
be in `0..array.size` \n * @param toIndex the end of the range (exclusive), must be in `fromIndex..array.size` \n
*\npublic actual fun LongArray.copyOfRange(fromIndex: Int, toIndex: Int): LongArray {\n
AbstractList.checkRangeIndexes(fromIndex, toIndex, size)\n  return withType("LongArray",
this.asDynamic().slice(fromIndex, toIndex))\n}\n\n/**\n * Returns a new array which is a copy of the specified
range of the original array.\n * \n * @param fromIndex the start of the range (inclusive), must be in `0..array.size` \n
* @param toIndex the end of the range (exclusive), must be in `fromIndex..array.size` \n *\npublic actual fun
FloatArray.copyOfRange(fromIndex: Int, toIndex: Int): FloatArray {\n
AbstractList.checkRangeIndexes(fromIndex, toIndex, size)\n  return this.asDynamic().slice(fromIndex,
toIndex)\n}\n\n/**\n * Returns a new array which is a copy of the specified range of the original array.\n * \n *
@param fromIndex the start of the range (inclusive), must be in `0..array.size` \n * @param toIndex the end of the
range (exclusive), must be in `fromIndex..array.size` \n *\npublic actual fun DoubleArray.copyOfRange(fromIndex:
Int, toIndex: Int): DoubleArray {\n  AbstractList.checkRangeIndexes(fromIndex, toIndex, size)\n  return
this.asDynamic().slice(fromIndex, toIndex)\n}\n\n/**\n * Returns a new array which is a copy of the specified range
of the original array.\n * \n * @param fromIndex the start of the range (inclusive), must be in `0..array.size` \n *
@param toIndex the end of the range (exclusive), must be in `fromIndex..array.size` \n *\npublic actual fun
BooleanArray.copyOfRange(fromIndex: Int, toIndex: Int): BooleanArray {\n
AbstractList.checkRangeIndexes(fromIndex, toIndex, size)\n  return withType("BooleanArray",
this.asDynamic().slice(fromIndex, toIndex))\n}\n\n/**\n * Returns a new array which is a copy of the specified
range of the original array.\n * \n * @param fromIndex the start of the range (inclusive), must be in `0..array.size` \n
* @param toIndex the end of the range (exclusive), must be in `fromIndex..array.size` \n *\npublic actual fun
CharArray.copyOfRange(fromIndex: Int, toIndex: Int): CharArray {\n
AbstractList.checkRangeIndexes(fromIndex, toIndex, size)\n  return withType("CharArray",
this.asDynamic().slice(fromIndex, toIndex))\n}\n\n/**\n * Fills this array or its subrange with the specified
[element] value.\n * \n * @param fromIndex the start of the range (inclusive), 0 by default.\n * @param toIndex the
end of the range (exclusive), size of this array by default.\n * \n * @throws IndexOutOfBoundsException if
[fromIndex] is less than zero or [toIndex] is greater than the size of this array.\n * @throws
IllegalArgumentException if [fromIndex] is greater than [toIndex].\n
*\n*\n@SinceKotlin("1.3")\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\npublic
actual fun <T> Array<T>.fill(element: T, fromIndex: Int = 0, toIndex: Int = size): Unit {\n

```

AbstractList.checkRangeIndexes(fromIndex, toIndex, size)\n this.asDynamic().fill(element, fromIndex, toIndex);\n}\n\n/\*\*\n \* Fills this array or its subrange with the specified [element] value.\n \* \n \* @param fromIndex the start of the range (inclusive), 0 by default.\n \* @param toIndex the end of the range (exclusive), size of this array by default.\n \* \n \* @throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this array.\n \* @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n

\*\n@SinceKotlin("1.3")\n@Suppress("ACTUAL\_FUNCTION\_WITH\_DEFAULT\_ARGUMENTS")\n\npublic actual fun ByteArray.fill(element: Byte, fromIndex: Int = 0, toIndex: Int = size): Unit {\n

AbstractList.checkRangeIndexes(fromIndex, toIndex, size)\n this.asDynamic().fill(element, fromIndex, toIndex);\n}\n\n/\*\*\n \* Fills this array or its subrange with the specified [element] value.\n \* \n \* @param fromIndex the start of the range (inclusive), 0 by default.\n \* @param toIndex the end of the range (exclusive), size of this array by default.\n \* \n \* @throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this array.\n \* @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n

\*\n@SinceKotlin("1.3")\n@Suppress("ACTUAL\_FUNCTION\_WITH\_DEFAULT\_ARGUMENTS")\n\npublic actual fun ShortArray.fill(element: Short, fromIndex: Int = 0, toIndex: Int = size): Unit {\n

AbstractList.checkRangeIndexes(fromIndex, toIndex, size)\n this.asDynamic().fill(element, fromIndex, toIndex);\n}\n\n/\*\*\n \* Fills this array or its subrange with the specified [element] value.\n \* \n \* @param fromIndex the start of the range (inclusive), 0 by default.\n \* @param toIndex the end of the range (exclusive), size of this array by default.\n \* \n \* @throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this array.\n \* @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n

\*\n@SinceKotlin("1.3")\n@Suppress("ACTUAL\_FUNCTION\_WITH\_DEFAULT\_ARGUMENTS")\n\npublic actual fun IntArray.fill(element: Int, fromIndex: Int = 0, toIndex: Int = size): Unit {\n

AbstractList.checkRangeIndexes(fromIndex, toIndex, size)\n this.asDynamic().fill(element, fromIndex, toIndex);\n}\n\n/\*\*\n \* Fills this array or its subrange with the specified [element] value.\n \* \n \* @param fromIndex the start of the range (inclusive), 0 by default.\n \* @param toIndex the end of the range (exclusive), size of this array by default.\n \* \n \* @throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this array.\n \* @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n

\*\n@SinceKotlin("1.3")\n@Suppress("ACTUAL\_FUNCTION\_WITH\_DEFAULT\_ARGUMENTS")\n\npublic actual fun LongArray.fill(element: Long, fromIndex: Int = 0, toIndex: Int = size): Unit {\n

AbstractList.checkRangeIndexes(fromIndex, toIndex, size)\n this.asDynamic().fill(element, fromIndex, toIndex);\n}\n\n/\*\*\n \* Fills this array or its subrange with the specified [element] value.\n \* \n \* @param fromIndex the start of the range (inclusive), 0 by default.\n \* @param toIndex the end of the range (exclusive), size of this array by default.\n \* \n \* @throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this array.\n \* @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n

\*\n@SinceKotlin("1.3")\n@Suppress("ACTUAL\_FUNCTION\_WITH\_DEFAULT\_ARGUMENTS")\n\npublic actual fun FloatArray.fill(element: Float, fromIndex: Int = 0, toIndex: Int = size): Unit {\n

AbstractList.checkRangeIndexes(fromIndex, toIndex, size)\n this.asDynamic().fill(element, fromIndex, toIndex);\n}\n\n/\*\*\n \* Fills this array or its subrange with the specified [element] value.\n \* \n \* @param fromIndex the start of the range (inclusive), 0 by default.\n \* @param toIndex the end of the range (exclusive), size of this array by default.\n \* \n \* @throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this array.\n \* @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n

\*\n@SinceKotlin("1.3")\n@Suppress("ACTUAL\_FUNCTION\_WITH\_DEFAULT\_ARGUMENTS")\n\npublic actual fun DoubleArray.fill(element: Double, fromIndex: Int = 0, toIndex: Int = size): Unit {\n

```

AbstractList.checkRangeIndexes(fromIndex, toIndex, size)\n  this.asDynamic().fill(element, fromIndex,
toIndex);\n}\n\n/**\n * Fills this array or its subrange with the specified [element] value.\n * \n * @param
fromIndex the start of the range (inclusive), 0 by default.\n * @param toIndex the end of the range (exclusive), size
of this array by default.\n * \n * @throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex]
is greater than the size of this array.\n * @throws IllegalArgumentException if [fromIndex] is greater than
[toIndex].\n
*\n@SinceKotlin("1.3")\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\npublic
actual fun BooleanArray.fill(element: Boolean, fromIndex: Int = 0, toIndex: Int = size): Unit {\n
AbstractList.checkRangeIndexes(fromIndex, toIndex, size)\n  this.asDynamic().fill(element, fromIndex,
toIndex);\n}\n\n/**\n * Fills this array or its subrange with the specified [element] value.\n * \n * @param
fromIndex the start of the range (inclusive), 0 by default.\n * @param toIndex the end of the range (exclusive), size
of this array by default.\n * \n * @throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex]
is greater than the size of this array.\n * @throws IllegalArgumentException if [fromIndex] is greater than
[toIndex].\n
*\n@SinceKotlin("1.3")\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\npublic
actual fun CharArray.fill(element: Char, fromIndex: Int = 0, toIndex: Int = size): Unit {\n
AbstractList.checkRangeIndexes(fromIndex, toIndex, size)\n  this.asDynamic().fill(element, fromIndex,
toIndex);\n}\n\n/**\n * Returns an array containing all elements of the original array and then the given [element].\n
*\n@Suppress("ACTUAL_WITHOUT_EXPECT", "NOTHING_TO_INLINE")\npublic actual inline operator
fun <T> Array<out T>.plus(element: T): Array<T> {\n  return
this.asDynamic().concat(arrayOf(element))\n}\n\n/**\n * Returns an array containing all elements of the original
array and then the given [element].\n *\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline operator
fun ByteArray.plus(element: Byte): ByteArray {\n  return plus(byteArrayOf(element))\n}\n\n/**\n * Returns an
array containing all elements of the original array and then the given [element].\n
*\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline operator fun ShortArray.plus(element: Short):
ShortArray {\n  return plus(shortArrayOf(element))\n}\n\n/**\n * Returns an array containing all elements of the
original array and then the given [element].\n *\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline
operator fun IntArray.plus(element: Int): IntArray {\n  return plus(intArrayOf(element))\n}\n\n/**\n * Returns an
array containing all elements of the original array and then the given [element].\n
*\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline operator fun LongArray.plus(element: Long):
LongArray {\n  return plus(longArrayOf(element))\n}\n\n/**\n * Returns an array containing all elements of the
original array and then the given [element].\n *\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline
operator fun FloatArray.plus(element: Float): FloatArray {\n  return plus(floatArrayOf(element))\n}\n\n/**\n *
Returns an array containing all elements of the original array and then the given [element].\n
*\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline operator fun DoubleArray.plus(element:
Double): DoubleArray {\n  return plus(doubleArrayOf(element))\n}\n\n/**\n * Returns an array containing all
elements of the original array and then the given [element].\n *\n@Suppress("NOTHING_TO_INLINE")\npublic
actual inline operator fun BooleanArray.plus(element: Boolean): BooleanArray {\n  return
plus(booleanArrayOf(element))\n}\n\n/**\n * Returns an array containing all elements of the original array and then
the given [element].\n *\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline operator fun
CharArray.plus(element: Char): CharArray {\n  return plus(charArrayOf(element))\n}\n\n/**\n * Returns an array
containing all elements of the original array and then all elements of the given [elements] collection.\n
*\n@Suppress("ACTUAL_WITHOUT_EXPECT")\npublic actual operator fun <T> Array<out T>.plus(elements:
Collection<T>): Array<T> {\n  return arrayPlusCollection(this, elements)\n}\n\n/**\n * Returns an array
containing all elements of the original array and then all elements of the given [elements] collection.\n *\npublic
actual operator fun ByteArray.plus(elements: Collection<Byte>): ByteArray {\n  return
fillFromCollection(this.copyOf(size + elements.size), this.size, elements)\n}\n\n/**\n * Returns an array containing
all elements of the original array and then all elements of the given [elements] collection.\n *\npublic actual

```

```

operator fun ShortArray.plus(elements: Collection<Short>): ShortArray {\n  return
fillFromCollection(this.copyOf(size + elements.size), this.size, elements)\n}\n\n/**\n * Returns an array containing
all elements of the original array and then all elements of the given [elements] collection.\n */\npublic actual
operator fun IntArray.plus(elements: Collection<Int>): IntArray {\n  return fillFromCollection(this.copyOf(size +
elements.size), this.size, elements)\n}\n\n/**\n * Returns an array containing all elements of the original array and
then all elements of the given [elements] collection.\n */\npublic actual operator fun LongArray.plus(elements:
Collection<Long>): LongArray {\n  return arrayPlusCollection(this, elements)\n}\n\n/**\n * Returns an array
containing all elements of the original array and then all elements of the given [elements] collection.\n */\npublic
actual operator fun FloatArray.plus(elements: Collection<Float>): FloatArray {\n  return
fillFromCollection(this.copyOf(size + elements.size), this.size, elements)\n}\n\n/**\n * Returns an array containing
all elements of the original array and then all elements of the given [elements] collection.\n */\npublic actual
operator fun DoubleArray.plus(elements: Collection<Double>): DoubleArray {\n  return
fillFromCollection(this.copyOf(size + elements.size), this.size, elements)\n}\n\n/**\n * Returns an array containing
all elements of the original array and then all elements of the given [elements] collection.\n */\npublic actual
operator fun BooleanArray.plus(elements: Collection<Boolean>): BooleanArray {\n  return
arrayPlusCollection(this, elements)\n}\n\n/**\n * Returns an array containing all elements of the original array and
then all elements of the given [elements] collection.\n */\npublic actual operator fun CharArray.plus(elements:
Collection<Char>): CharArray {\n  return fillFromCollection(this.copyOf(size + elements.size), this.size,
elements)\n}\n\n/**\n * Returns an array containing all elements of the original array and then all elements of the
given [elements] array.\n */\n\n@Suppress("ACTUAL_WITHOUT_EXPECT",
"NOTHING_TO_INLINE")\npublic actual inline operator fun <T> Array<out T>.plus(elements: Array<out T>):
Array<T> {\n  return this.asDynamic().concat(elements)\n}\n\n/**\n * Returns an array containing all elements of
the original array and then all elements of the given [elements] array.\n
*/\n\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline operator fun ByteArray.plus(elements:
ByteArray): ByteArray {\n  return primitiveArrayConcat(this, elements)\n}\n\n/**\n * Returns an array containing
all elements of the original array and then all elements of the given [elements] array.\n
*/\n\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline operator fun ShortArray.plus(elements:
ShortArray): ShortArray {\n  return primitiveArrayConcat(this, elements)\n}\n\n/**\n * Returns an array
containing all elements of the original array and then all elements of the given [elements] array.\n
*/\n\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline operator fun IntArray.plus(elements: IntArray):
IntArray {\n  return primitiveArrayConcat(this, elements)\n}\n\n/**\n * Returns an array containing all elements of
the original array and then all elements of the given [elements] array.\n
*/\n\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline operator fun LongArray.plus(elements:
LongArray): LongArray {\n  return primitiveArrayConcat(this, elements)\n}\n\n/**\n * Returns an array
containing all elements of the original array and then all elements of the given [elements] array.\n
*/\n\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline operator fun FloatArray.plus(elements:
FloatArray): FloatArray {\n  return primitiveArrayConcat(this, elements)\n}\n\n/**\n * Returns an array containing
all elements of the original array and then all elements of the given [elements] array.\n
*/\n\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline operator fun DoubleArray.plus(elements:
DoubleArray): DoubleArray {\n  return primitiveArrayConcat(this, elements)\n}\n\n/**\n * Returns an array
containing all elements of the original array and then all elements of the given [elements] array.\n
*/\n\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline operator fun BooleanArray.plus(elements:
BooleanArray): BooleanArray {\n  return primitiveArrayConcat(this, elements)\n}\n\n/**\n * Returns an array
containing all elements of the original array and then all elements of the given [elements] array.\n
*/\n\n@Suppress("NOTHING_TO_INLINE")\npublic actual inline operator fun CharArray.plus(elements:
CharArray): CharArray {\n  return primitiveArrayConcat(this, elements)\n}\n\n/**\n * Returns an array containing
all elements of the original array and then the given [element].\n
*/\n\n@Suppress("ACTUAL_WITHOUT_EXPECT", "NOTHING_TO_INLINE")\npublic actual inline fun <T>

```



```

Array<out T>.plusElement(element: T): Array<T> {
    return
    this.asDynamic().concat(arrayOf(element))
}

@sample
samples.collections.Arrays.Sorting.sortArray
@library("primitiveArraySort")
public actual fun
IntArray.sort(): Unit {
    definedExternally
}

@sample
samples.collections.Arrays.Sorting.sortArray
public actual fun
LongArray.sort(): Unit {
    if (size > 1) sort {
        a: Long, b: Long -> a.compareTo(b)
    }
}

@sample
samples.collections.Arrays.Sorting.sortArray
@library("primitiveArraySort")
public actual fun
ByteArray.sort(): Unit {
    definedExternally
}

@sample
samples.collections.Arrays.Sorting.sortArray
@library("primitiveArraySort")
public actual fun
ShortArray.sort(): Unit {
    definedExternally
}

@sample
samples.collections.Arrays.Sorting.sortArray
@library("primitiveArraySort")
public actual fun
DoubleArray.sort(): Unit {
    definedExternally
}

@sample
samples.collections.Arrays.Sorting.sortArray
@library("primitiveArraySort")
public actual fun
FloatArray.sort(): Unit {
    definedExternally
}

@sample
samples.collections.Arrays.Sorting.sortArray
@library("primitiveArraySort")
public actual fun
CharArray.sort(): Unit {
    definedExternally
}

@sample
samples.collections.Arrays.Sorting.sortArrayOfComparable
public actual fun
<T : Comparable<T>> Array<out T>.sort(): Unit {
    if (size > 1) sortArray(this)
}

@sample
samples.collections.Arrays.Sorting.sortArrayOfComparable
public fun <T> Array<out
T>.sort(comparison: (a: T, b: T) -> Int): Unit {
    if (size > 1) sortArrayWith(this, comparison)
}

@kotlin.internal.InlineOnly
public inline fun ByteArray.sort(noinline comparison: (a: Byte, b: Byte) -> Int):
Unit {
    asDynamic().sort(comparison)
}

@kotlin.internal.InlineOnly
public inline fun ShortArray.sort(noinline
comparison: (a: Short, b: Short) -> Int): Unit {
    asDynamic().sort(comparison)
}

@kotlin.internal.InlineOnly
public inline fun IntArray.sort(noinline comparison: (a: Int, b: Int) -> Int): Unit {
    asDynamic().sort(comparison)
}

@kotlin.internal.InlineOnly
public inline fun LongArray.sort(noinline comparison:
(a: Long, b: Long) -> Int): Unit {
    asDynamic().sort(comparison)
}

@kotlin.internal.InlineOnly
public inline fun
FloatArray.sort(noinline comparison: (a: Float, b: Float) -> Int): Unit {
    asDynamic().sort(comparison)
}

@kotlin.internal.InlineOnly
public inline fun DoubleArray.sort(noinline comparison:
(a: Double, b: Double) -> Int): Unit {
    asDynamic().sort(comparison)
}

@kotlin.internal.InlineOnly
public inline fun
CharArray.sort(noinline comparison: (a: Char, b: Char) -> Int): Unit {
    asDynamic().sort(comparison)
}

@sample
samples.collections.Arrays.Sorting.sortArrayOfComparable
public actual fun <T> Array<out T>.sortWith(comparator: Comparator<in T>): Unit {
    if
(size > 1) sortArrayWith(this, comparator)
}

@sample
samples.collections.Arrays.Sorting.sortArrayOfComparable
public actual fun ByteArray.toTypedArray(): Array<Byte> {
    return
    js("[]").slice.call(this)
}

@sample
samples.collections.Arrays.Sorting.sortArrayOfComparable
public actual fun ShortArray.toTypedArray(): Array<Short> {
    return
    js("[]").slice.call(this)
}

@sample
samples.collections.Arrays.Sorting.sortArrayOfComparable
public actual fun IntArray.toTypedArray(): Array<Int> {
    return
    js("[]").slice.call(this)
}

```

\* Returns a *typed* object array containing all of the elements of this primitive array.  
`LongArray.toArray(): Array<Long> { \n return js("[]").slice.call(this)\n }\n\n` \* Returns a *typed* object array containing all of the elements of this primitive array.  
`FloatArray.toArray(): Array<Float> { \n return js("[]").slice.call(this)\n }\n\n` \* Returns a *typed* object array containing all of the elements of this primitive array.  
`DoubleArray.toArray(): Array<Double> { \n return js("[]").slice.call(this)\n }\n\n` \* Returns a *typed* object array containing all of the elements of this primitive array.  
`BooleanArray.toArray(): Array<Boolean> { \n return js("[]").slice.call(this)\n }\n\n` \* Returns a *typed* object array containing all of the elements of this primitive array.  
`CharArray.toArray(): Array<Char> { \n return Array(size) { index -> this[index] }\n }\n\n` \* Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.  
 Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.  
`@file:kotlin.jvm.JvmName("ComparisonsKt")\n@file:kotlin.jvm.JvmMultifileClass\npackage kotlin.comparisons\n\n` \* Compares two values using the specified functions [selectors] to calculate the result of the comparison.  
 The functions are called sequentially, receive the given values [a] and [b] and return [Comparable] objects. As soon as the [Comparable] instances returned by a function for [a] and [b] values do not compare as equal, the result of that comparison is returned.  
`@sample\nsamples.comparisons.Comparisons.compareValuesByWithSelectors\n\n` \* `public fun <T> compareValuesBy(a: T, b: T, vararg selectors: (T) -> Comparable<*>?): Int { \n require(selectors.size > 0)\n return compareValuesByImpl(a, b, selectors)\n }\n\n` \* `private fun <T> compareValuesByImpl(a: T, b: T, selectors: Array<out (T) -> Comparable<*>?): Int { \n for (fn in selectors) { \n val v1 = fn(a)\n val v2 = fn(b)\n val diff = compareValues(v1, v2)\n if (diff != 0) return diff\n } \n return 0\n }\n\n` \* Compares two values using the specified [selector] function to calculate the result of the comparison.  
 The function is applied to the given values [a] and [b] and return [Comparable] objects.  
 The result of comparison of these [Comparable] instances is returned.  
`@sample\nsamples.comparisons.Comparisons.compareValuesByWithSingleSelector\n\n` \* `@kotlin.internal.InlineOnly\n\n` \* `public inline fun <T> compareValuesBy(a: T, b: T, selector: (T) -> Comparable<*>?): Int { \n return compareValues(selector(a), selector(b))\n }\n\n` \* Compares two values using the specified [selector] function to calculate the result of the comparison.  
 The function is applied to the given values [a] and [b] and return objects of type K which are then being compared with the given [comparator].  
`@sample\nsamples.comparisons.Comparisons.compareValuesByWithComparator\n\n` \* `@kotlin.internal.InlineOnly\n\n` \* `public inline fun <T, K> compareValuesBy(a: T, b: T, comparator: Comparator<in K>, selector: (T) -> K): Int { \n return comparator.compare(selector(a), selector(b))\n }\n\n` \* Not so useful without type inference for receiver of expression  
`compareValuesWith(v1, v2, compareBy { it.prop1 } thenByDescending { it.prop2 })\n\n` \* Compares two values using the specified [comparator].  
`@Suppress("NOTHING_TO_INLINE")\n\n` \* `public inline fun <T> compareValuesWith(a: T, b: T, comparator: Comparator<T>): Int = comparator.compare(a, b)\n\n` \* Compares two nullable [Comparable] values. Null is considered less than any value.  
`@sample\nsamples.comparisons.Comparisons.compareValues\n\n` \* `public fun <T : Comparable<*>> compareValues(a: T?, b: T?): Int { \n if (a === b) return 0\n if (a == null) return -1\n if (b == null) return 1\n @Suppress("UNCHECKED_CAST")\n return (a as Comparable<Any>).compareTo(b)\n }\n\n` \* Creates a comparator using the sequence of functions to calculate a result of comparison.  
 The functions are called sequentially, receive the given values `a` and `b` and return [Comparable] objects. As soon as the [Comparable] instances returned by a function for `a` and `b` values do not compare as equal, the result of that comparison is returned from the [Comparator].  
`@sample\nsamples.comparisons.Comparisons.compareByWithSelectors\n\n` \* `public fun <T> compareBy(vararg selectors: (T) -> Comparable<*>?): Comparator<T> { \n require(selectors.size > 0)\n return Comparator { a, b -> compareValuesByImpl(a, b, selectors) }\n }\n\n` \* Creates a comparator using the function to transform value to a [Comparable] instance for comparison.  
`@sample\nsamples.comparisons.Comparisons.compareByWithSingleSelector\n\n` \* `@kotlin.internal.InlineOnly\n\n` \* `public inline`

```

fun <T> compareBy(crossinline selector: (T) -> Comparable<*>?): Comparator<T> =\n    Comparator { a, b ->
compareValuesBy(a, b, selector) }\n\n/**\n * Creates a comparator using the [selector] function to transform values
being compared and then applying\n * the specified [comparator] to compare transformed values.\n *\n * @sample
samples.comparisons.Comparisons.compareByWithComparator\n *\n@kotlin.internal.InlineOnly\npublic inline
fun <T, K> compareBy(comparator: Comparator<in K>, crossinline selector: (T) -> K): Comparator<T> =\n
Comparator { a, b -> compareValuesBy(a, b, comparator, selector) }\n\n/**\n * Creates a descending comparator
using the function to transform value to a [Comparable] instance for comparison.\n *\n * @sample
samples.comparisons.Comparisons.compareByDescendingWithSingleSelector\n
*\n@kotlin.internal.InlineOnly\npublic inline fun <T> compareByDescending(crossinline selector: (T) ->
Comparable<*>?): Comparator<T> =\n    Comparator { a, b -> compareValuesBy(b, a, selector) }\n\n/**\n *
Creates a descending comparator using the [selector] function to transform values being compared and then
applying\n * the specified [comparator] to compare transformed values.\n *\n * Note that an order of [comparator] is
reversed by this wrapper.\n *\n * @sample
samples.comparisons.Comparisons.compareByDescendingWithComparator\n
*\n@kotlin.internal.InlineOnly\npublic inline fun <T, K> compareByDescending(comparator: Comparator<in K>,
crossinline selector: (T) -> K): Comparator<T> =\n    Comparator { a, b -> compareValuesBy(b, a, comparator,
selector) }\n\n/**\n * Creates a comparator comparing values after the primary comparator defined them equal. It
uses\n * the function to transform value to a [Comparable] instance for comparison.\n *\n * @sample
samples.comparisons.Comparisons.thenBy\n *\n@kotlin.internal.InlineOnly\npublic inline fun <T>
Comparator<T>.thenBy(crossinline selector: (T) -> Comparable<*>?): Comparator<T> =\n    Comparator { a, b -
->\n        val previousCompare = this@thenBy.compare(a, b)\n        if (previousCompare != 0) previousCompare else
compareValuesBy(a, b, selector)\n    }\n\n/**\n * Creates a comparator comparing values after the primary
comparator defined them equal. It uses\n * the [selector] function to transform values and then compares them with
the given [comparator].\n *\n * @sample
samples.comparisons.Comparisons.thenByWithComparator\n
*\n@kotlin.internal.InlineOnly\npublic inline fun <T, K> Comparator<T>.thenBy(comparator: Comparator<in K>,
crossinline selector: (T) -> K): Comparator<T> =\n    Comparator { a, b ->\n        val previousCompare =
this@thenBy.compare(a, b)\n        if (previousCompare != 0) previousCompare else compareValuesBy(a, b,
comparator, selector)\n    }\n\n/**\n * Creates a descending comparator using the primary comparator and\n * the
function to transform value to a [Comparable] instance for comparison.\n *\n * @sample
samples.comparisons.Comparisons.thenByDescending\n *\n@kotlin.internal.InlineOnly\npublic inline fun <T>
Comparator<T>.thenByDescending(crossinline selector: (T) -> Comparable<*>?): Comparator<T> =\n
Comparator { a, b ->\n        val previousCompare = this@thenByDescending.compare(a, b)\n        if
(previousCompare != 0) previousCompare else compareValuesBy(b, a, selector)\n    }\n\n/**\n * Creates a
descending comparator comparing values after the primary comparator defined them equal. It uses\n * the [selector]
function to transform values and then compares them with the given [comparator].\n *\n * @sample
samples.comparisons.Comparisons.thenByDescendingWithComparator\n *\n@kotlin.internal.InlineOnly\npublic
inline fun <T, K> Comparator<T>.thenByDescending(comparator: Comparator<in K>, crossinline selector: (T) ->
K): Comparator<T> =\n    Comparator { a, b ->\n        val previousCompare = this@thenByDescending.compare(a,
b)\n        if (previousCompare != 0) previousCompare else compareValuesBy(b, a, comparator, selector)\n    }\n\n
}\n\n/**\n * Creates a comparator using the primary comparator and function to calculate a result of comparison.\n
*\n * @sample
samples.comparisons.Comparisons.thenComparator\n *\n@kotlin.internal.InlineOnly\npublic inline
fun <T> Comparator<T>.thenComparator(crossinline comparison: (a: T, b: T) -> Int): Comparator<T> =\n
Comparator { a, b ->\n        val previousCompare = this@thenComparator.compare(a, b)\n        if (previousCompare
!= 0) previousCompare else comparison(a, b)\n    }\n\n/**\n * Combines this comparator and the given [comparator]
such that the latter is applied only\n * when the former considered values equal.\n *\n * @sample
samples.comparisons.Comparisons.then\n *\npublic infix fun <T> Comparator<T>.then(comparator:
Comparator<in T>): Comparator<T> =\n    Comparator { a, b ->\n        val previousCompare =
this@then.compare(a, b)\n        if (previousCompare != 0) previousCompare else comparator.compare(a, b)\n

```

```

}

/**
 * Combines this comparator and the given [comparator] such that the latter is applied only
 * when the former considered values equal.
 * @sample samples.comparisons.Comparisons.thenDescending
 */
public infix fun <T> Comparator<T>.thenDescending(comparator: Comparator<in T>): Comparator<T> =
    Comparator<T> { a, b ->
        val previousCompare = this@thenDescending.compare(a, b)
        if (previousCompare != 0) previousCompare else comparator.compare(b, a)
    }

// Not so useful without type inference for receiver of expression
/**
 * Extends the given [comparator] of non-nullable values to a comparator
 * of nullable values
 * considering `null` value less than any other value.
 * @sample
 * samples.comparisons.Comparisons.nullsFirstLastWithComparator
 */
public fun <T : Any>
    nullsFirst(comparator: Comparator<in T>): Comparator<T?> =
    Comparator { a, b ->
        when {
            a == b -> 0
            a == null -> -1
            b == null -> 1
            else -> comparator.compare(a, b)
        }
    }

/**
 * Provides a comparator of nullable [Comparable] values
 * considering `null` value less than any other value.
 * @sample
 * samples.comparisons.Comparisons.nullsFirstLastComparator
 */
@kotlin.internal.InlineOnly
public inline fun <T : Comparable<T>> nullsFirst(): Comparator<T?> =
    nullsFirst(naturalOrder())

/**
 * Extends the given [comparator] of non-nullable values to a comparator of
 * nullable values
 * considering `null` value greater than any other value.
 * @sample
 * samples.comparisons.Comparisons.nullsFirstLastWithComparator
 */
public fun <T : Any>
    nullsLast(comparator: Comparator<in T>): Comparator<T?> =
    Comparator { a, b ->
        when {
            a == b -> 0
            a == null -> 1
            b == null -> -1
            else -> comparator.compare(a, b)
        }
    }

/**
 * Provides a comparator of nullable [Comparable] values
 * considering `null` value greater than any other value.
 * @sample
 * samples.comparisons.Comparisons.nullsFirstLastComparator
 */
@kotlin.internal.InlineOnly
public inline fun <T : Comparable<T>> nullsLast(): Comparator<T?> =
    nullsLast(naturalOrder())

/**
 * Returns a comparator that compares [Comparable] objects in natural order.
 * @sample
 * samples.comparisons.Comparisons.naturalOrderComparator
 */
public fun <T : Comparable<T>>
    naturalOrder(): Comparator<T> = @Suppress("UNCHECKED_CAST") (NaturalOrderComparator as
    Comparator<T>)

/**
 * Returns a comparator that compares [Comparable] objects in reversed natural order.
 * @sample
 * samples.comparisons.Comparisons.nullsFirstLastWithComparator
 */
public fun <T :
    Comparable<T>> reverseOrder(): Comparator<T> = @Suppress("UNCHECKED_CAST")
    (ReverseOrderComparator as Comparator<T>)

/**
 * Returns a comparator that imposes the reverse ordering
 * of this comparator.
 * @sample
 * samples.comparisons.Comparisons.reversed
 */
public fun <T>
    Comparator<T>.reversed(): Comparator<T> = when (this) {
        is ReversedComparator -> this.comparator
        NaturalOrderComparator -> @Suppress("UNCHECKED_CAST") (ReverseOrderComparator as
        Comparator<T>)
        ReverseOrderComparator -> @Suppress("UNCHECKED_CAST")
        (NaturalOrderComparator as Comparator<T>)
    } else -> ReversedComparator(this)

private class
    ReversedComparator<T>(public val comparator: Comparator<T>) : Comparator<T> {
    override fun compare(a: T, b: T): Int = comparator.compare(b, a)
    @Suppress("VIRTUAL_MEMBER_HIDDEN")
    fun reversed():
        Comparator<T> = comparator
}

private object NaturalOrderComparator : Comparator<Comparable<Any>> {
    override fun compare(a: Comparable<Any>, b: Comparable<Any>): Int = a.compareTo(b)
    @Suppress("VIRTUAL_MEMBER_HIDDEN")
    fun reversed():
        Comparator<Comparable<Any>> =
        ReverseOrderComparator
}

private object ReverseOrderComparator : Comparator<Comparable<Any>> {
    override fun compare(a: Comparable<Any>, b: Comparable<Any>): Int = b.compareTo(a)
    @Suppress("VIRTUAL_MEMBER_HIDDEN")
    fun reversed():
        Comparator<Comparable<Any>> =
        NaturalOrderComparator
}

}

/**
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 * contributors.
 * Use of this source code is governed by the Apache 2.0 license that can be
 * found in the
 * license/LICENSE.txt file.
 */
package kotlin

public actual interface Comparator<T> {
    @JsName("compare")
    actual fun compare(a: T, b: T): Int
}

public actual inline fun <T>
    Comparator(crossinline comparison: (a: T, b: T) -> Int): Comparator<T> = object : Comparator<T> {
    override
        fun compare(a: T, b: T): Int = comparison(a, b)
}

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 * Programming Language contributors.
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```

found in the license/LICENSE.txt file.\n

```
*\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName(\"StandardKt\")\npackage kotlin\n\nimport\nkotlin.contracts.*\n\n/**\n * An exception is thrown to indicate that a method body remains to be implemented.\n */\npublic class NotImplementedError(message: String = \"An operation is not implemented.\") :  
    Error(message)\n\n/**\n * Always throws [NotImplementedError] stating that operation is not implemented.\n */\n\n@kotlin.internal.InlineOnly\npublic inline fun TODO(): Nothing = throw NotImplementedError()\n\n/**\n * Always throws [NotImplementedError] stating that operation is not implemented.\n * @param reason a string explaining why the implementation is missing.\n */\n@kotlin.internal.InlineOnly\npublic inline fun TODO(reason: String): Nothing = throw NotImplementedError(\"An operation is not implemented: $reason\")\n\n/**\n * Calls the specified function [block] and returns its result.\n * For detailed usage information see the documentation for [scope functions](https://kotlinlang.org/docs/reference/scope-functions.html#run).\n */\n@kotlin.internal.InlineOnly\npublic inline fun <R> run(block: () -> R): R {\n    contract {\n        callsInPlace(block, InvocationKind.EXACTLY_ONCE)\n    }\n    return block()\n}\n\n/**\n * Calls the specified function [block] with `this` value as its receiver and returns its result.\n * For detailed usage information see the documentation for [scope functions](https://kotlinlang.org/docs/reference/scope-functions.html#run).\n */\n@kotlin.internal.InlineOnly\npublic inline fun <T, R> T.run(block: T.() -> R): R {\n    contract {\n        callsInPlace(block, InvocationKind.EXACTLY_ONCE)\n    }\n    return block()\n}\n\n/**\n * Calls the specified function [block] with the given [receiver] as its receiver and returns its result.\n * For detailed usage information see the documentation for [scope functions](https://kotlinlang.org/docs/reference/scope-functions.html#with).\n */\n@kotlin.internal.InlineOnly\npublic inline fun <T, R> with(receiver: T, block: T.() -> R): R {\n    contract {\n        callsInPlace(block, InvocationKind.EXACTLY_ONCE)\n    }\n    return receiver.block()\n}\n\n/**\n * Calls the specified function [block] with `this` value as its receiver and returns `this` value.\n * For detailed usage information see the documentation for [scope functions](https://kotlinlang.org/docs/reference/scope-functions.html#apply).\n */\n@kotlin.internal.InlineOnly\npublic inline fun <T> T.apply(block: T.() -> Unit): T {\n    contract {\n        callsInPlace(block, InvocationKind.EXACTLY_ONCE)\n    }\n    block()\n    return this\n}\n\n/**\n * Calls the specified function [block] with `this` value as its argument and returns `this` value.\n * For detailed usage information see the documentation for [scope functions](https://kotlinlang.org/docs/reference/scope-functions.html#also).\n */\n@kotlin.internal.InlineOnly\n@SinceKotlin(\"1.1\")\npublic inline fun <T> T.also(block: (T) -> Unit): T {\n    contract {\n        callsInPlace(block, InvocationKind.EXACTLY_ONCE)\n    }\n    block(this)\n    return this\n}\n\n/**\n * Calls the specified function [block] with `this` value as its argument and returns its result.\n * For detailed usage information see the documentation for [scope functions](https://kotlinlang.org/docs/reference/scope-functions.html#let).\n */\n@kotlin.internal.InlineOnly\npublic inline fun <T, R> T.let(block: (T) -> R): R {\n    contract {\n        callsInPlace(block, InvocationKind.EXACTLY_ONCE)\n    }\n    return block(this)\n}\n\n/**\n * Returns `this` value if it satisfies the given [predicate] or `null`, if it doesn't.\n */\n@kotlin.internal.InlineOnly\n@SinceKotlin(\"1.1\")\npublic inline fun <T> T.takeIf(predicate: (T) -> Boolean): T? {\n    contract {\n        callsInPlace(predicate, InvocationKind.EXACTLY_ONCE)\n    }\n    return if (predicate(this)) this else null\n}\n\n/**\n * Returns `this` value if it _does not_ satisfy the given [predicate] or `null`, if it does.\n */\n@kotlin.internal.InlineOnly\n@SinceKotlin(\"1.1\")\npublic inline fun <T> T.takeUnless(predicate: (T) -> Boolean): T? {\n    contract {\n        callsInPlace(predicate, InvocationKind.EXACTLY_ONCE)\n    }\n    return if (!predicate(this)) this else null\n}\n\n/**\n * Executes the given function [action] specified number of [times].\n * A zero-based index of current iteration is passed as a parameter to [action].\n * @sample samples.misc.ControlFlow.repeat\n */\n@kotlin.internal.InlineOnly\npublic inline fun repeat(times: Int, action: (Int) -> Unit) {\n    contract { callsInPlace(action) }\n    for (index in 0 until times) {\n        action(index)\n    }\n}\n\n/*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.comparisons\n\n// NOTE: THIS FILE IS AUTO-GENERATED by the
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GenerateStandardLib.kt\n// See: https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib\n\nimport
kotlin.js.*\n\n/**\n * Returns the greater of two values.\n * If values are equal, returns the first one.\n
*\n@SinceKotlin("1.1")\npublic actual fun <T : Comparable<T>> maxOf(a: T, b: T): T {\n    return if (a >= b) a
else b\n}\n\n/**\n * Returns the greater of two values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun maxOf(a: Byte, b: Byte): Byte {\n    return Math.max(a.toInt(), b.toInt()).unsafeCast<Byte>()\n}\n\n/**\n
* Returns the greater of two values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun maxOf(a: Short, b: Short): Short {\n    return Math.max(a.toInt(),
b.toInt()).unsafeCast<Short>()\n}\n\n/**\n * Returns the greater of two values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun maxOf(a: Int, b: Int): Int {\n    return Math.max(a, b)\n}\n\n/**\n * Returns the greater of two values.\n
*\n@SinceKotlin("1.1")\n@Suppress("DEPRECATION_ERROR", "NOTHING_TO_INLINE")\npublic actual
inline fun maxOf(a: Long, b: Long): Long {\n    return if (a >= b) a else b\n}\n\n/**\n * Returns the greater of two
values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun maxOf(a: Float, b: Float): Float {\n    return Math.max(a, b)\n}\n\n/**\n * Returns the greater of two
values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun maxOf(a: Double, b: Double): Double {\n    return Math.max(a, b)\n}\n\n/**\n * Returns the greater of
three values.\n *\n@SinceKotlin("1.1")\npublic actual fun <T : Comparable<T>> maxOf(a: T, b: T, c: T): T {\n
    return maxOf(a, maxOf(b, c))\n}\n\n/**\n * Returns the greater of three values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun maxOf(a: Byte, b: Byte, c: Byte): Byte {\n    return Math.max(a.toInt(), b.toInt(),
c.toInt()).unsafeCast<Byte>()\n}\n\n/**\n * Returns the greater of three values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun maxOf(a: Short, b: Short, c: Short): Short {\n    return Math.max(a.toInt(), b.toInt(),
c.toInt()).unsafeCast<Short>()\n}\n\n/**\n * Returns the greater of three values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun maxOf(a: Int, b: Int, c: Int): Int {\n    return Math.max(a, b, c)\n}\n\n/**\n * Returns the greater of three
values.\n *\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic actual inline fun maxOf(a: Long, b: Long,
c: Long): Long {\n    return maxOf(a, maxOf(b, c))\n}\n\n/**\n * Returns the greater of three values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun maxOf(a: Float, b: Float, c: Float): Float {\n    return Math.max(a, b, c)\n}\n\n/**\n * Returns the greater
of three values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun maxOf(a: Double, b: Double, c: Double): Double {\n    return Math.max(a, b, c)\n}\n\n/**\n * Returns the
smaller of two values.\n * If values are equal, returns the first one.\n *\n@SinceKotlin("1.1")\npublic actual fun
<T : Comparable<T>> minOf(a: T, b: T): T {\n    return if (a <= b) a else b\n}\n\n/**\n * Returns the smaller of two
values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun minOf(a: Byte, b: Byte): Byte {\n    return Math.min(a.toInt(), b.toInt()).unsafeCast<Byte>()\n}\n\n/**\n
* Returns the smaller of two values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun minOf(a: Short, b: Short): Short {\n    return Math.min(a.toInt(),
b.toInt()).unsafeCast<Short>()\n}\n\n/**\n * Returns the smaller of two values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun minOf(a: Int, b: Int): Int {\n    return Math.min(a, b)\n}\n\n/**\n * Returns the smaller of two values.\n

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*\n@SinceKotlin("1.1")\n@Suppress("DEPRECATION_ERROR", "NOTHING_TO_INLINE")\npublic actual
inline fun minOf(a: Long, b: Long): Long {\n    return if (a <= b) a else b}\n}\n\n/**\n * Returns the smaller of two
values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun minOf(a: Float, b: Float): Float {\n    return Math.min(a, b)}\n}\n\n/**\n * Returns the smaller of two
values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun minOf(a: Double, b: Double): Double {\n    return Math.min(a, b)}\n}\n\n/**\n * Returns the smaller of
three values.\n
*\n@SinceKotlin("1.1")\npublic actual fun <T : Comparable<T>> minOf(a: T, b: T, c: T): T {\n
return minOf(a, minOf(b, c))}\n}\n\n/**\n * Returns the smaller of three values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun minOf(a: Byte, b: Byte, c: Byte): Byte {\n    return Math.min(a.toInt(), b.toInt(),
c.toInt()).unsafeCast<Byte>()}\n}\n\n/**\n * Returns the smaller of three values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun minOf(a: Short, b: Short, c: Short): Short {\n    return Math.min(a.toInt(), b.toInt(),
c.toInt()).unsafeCast<Short>()}\n}\n\n/**\n * Returns the smaller of three values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun minOf(a: Int, b: Int, c: Int): Int {\n    return Math.min(a, b, c)}\n}\n\n/**\n * Returns the smaller of three
values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic actual inline fun minOf(a: Long, b: Long,
c: Long): Long {\n    return minOf(a, minOf(b, c))}\n}\n\n/**\n * Returns the smaller of three values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun minOf(a: Float, b: Float, c: Float): Float {\n    return Math.min(a, b, c)}\n}\n\n/**\n * Returns the smaller
of three values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\npublic actual
inline fun minOf(a: Double, b: Double, c: Double): Double {\n    return Math.min(a, b, c)}\n}\n\n"/\n * Copyright
2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed
by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("CollectionsKt")\n\npackage
kotlin.collections\n\n/\n// NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt\n// See:
https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib\n\nimport kotlin.random.*\nimport
kotlin.ranges.contains\nimport kotlin.ranges.reversed\n\n/**\n * Returns 1st *element* from the list.\n * \n *
Throws an [IndexOutOfBoundsException] if the size of this list is less than 1.\n
*\n@kotlin.internal.InlineOnly\npublic inline operator fun <T> List<T>.component1(): T {\n    return
get(0)}\n}\n\n/**\n * Returns 2nd *element* from the list.\n * \n * Throws an [IndexOutOfBoundsException] if the
size of this list is less than 2.\n
*\n@kotlin.internal.InlineOnly\npublic inline operator fun <T>
List<T>.component2(): T {\n    return get(1)}\n}\n\n/**\n * Returns 3rd *element* from the list.\n * \n * Throws an
[IndexOutOfBoundsException] if the size of this list is less than 3.\n
*\n@kotlin.internal.InlineOnly\npublic inline operator fun <T> List<T>.component3(): T {\n    return
get(2)}\n}\n\n/**\n * Returns 4th *element* from the list.\n * \n * Throws an [IndexOutOfBoundsException] if the size of
this list is less than 4.\n
*\n@kotlin.internal.InlineOnly\npublic inline operator fun <T> List<T>.component4(): T {\n    return
get(3)}\n}\n\n/**\n * Returns 5th *element* from the list.\n * \n * Throws an [IndexOutOfBoundsException] if the
size of this list is less than 5.\n
*\n@kotlin.internal.InlineOnly\npublic inline operator fun <T>
List<T>.component5(): T {\n    return get(4)}\n}\n\n/**\n * Returns `true` if [element] is found in the collection.\n
*\npublic operator fun <@kotlin.internal.OnlyInputTypes T> Iterable<T>.contains(element: T): Boolean {\n    if
(this is Collection)\n        return contains(element)\n    return indexOf(element) >= 0}\n}\n\n/**\n * Returns an
element at the given [index] or throws an [IndexOutOfBoundsException] if the [index] is out of bounds of this
collection.\n * \n * @sample samples.collections.Collections.Elements.elementAt\n
*\npublic fun <T>
Iterable<T>.elementAt(index: Int): T {\n    if (this is List)\n        return get(index)\n    return

```

```

elementOrElse(index) { throw IndexOutOfBoundsException("Collection doesn't contain element at index
$index.") }
 * Returns an element at the given [index] or throws an [IndexOutOfBoundsException] if
the [index] is out of bounds of this list.
 * @sample samples.collections.Collections.Elements.elementAt
 * @kotlin.internal.InlineOnly
public inline fun <T> List<T>.elementAt(index: Int): T {
    return
get(index)
}
 * Returns an element at the given [index] or the result of calling the [defaultValue] function
if the [index] is out of bounds of this collection.
 * @sample
samples.collections.Collections.Elements.elementOrElse
public fun <T>
Iterable<T>.elementOrElse(index: Int, defaultValue: (Int) -> T): T {
    if (this is List)
        return
this.getOrElse(index, defaultValue)
    if (index < 0)
        return defaultValue(index)
    val iterator = iterator()
    var count = 0
    while (iterator.hasNext()) {
        val element = iterator.next()
        if (index == count++)
            return element
    }
    return defaultValue(index)
}
 * Returns an element at the given [index] or the
result of calling the [defaultValue] function if the [index] is out of bounds of this list.
 * @sample
samples.collections.Collections.Elements.elementOrElse
 * @kotlin.internal.InlineOnly
public inline fun
<T> List<T>.elementOrElse(index: Int, defaultValue: (Int) -> T): T {
    return if (index >= 0 && index <=
lastIndex) get(index) else defaultValue(index)
}
 * Returns an element at the given [index] or `null` if the
[index] is out of bounds of this collection.
 * @sample
samples.collections.Collections.Elements.elementOrNull
public fun <T>
Iterable<T>.elementOrNull(index: Int): T? {
    if (this is List)
        return this.getOrElse(index)
    if (index <
0)
        return null
    val iterator = iterator()
    var count = 0
    while (iterator.hasNext()) {
        val element =
iterator.next()
        if (index == count++)
            return element
    }
    return null
}
 * Returns an
element at the given [index] or `null` if the [index] is out of bounds of this list.
 * @sample
samples.collections.Collections.Elements.elementOrNull
 * @kotlin.internal.InlineOnly
public inline fun
<T> List<T>.elementOrNull(index: Int): T? {
    return this.getOrElse(index)
}
 * Returns the first
element matching the given [predicate], or `null` if no such element was found.
 * @kotlin.internal.InlineOnly
public inline fun <T> Iterable<T>.find(predicate: (T) -> Boolean): T? {
    return
firstOrNull(predicate)
}
 * Returns the last element matching the given [predicate], or `null` if no such
element was found.
 * @kotlin.internal.InlineOnly
public inline fun <T> Iterable<T>.findLast(predicate: (T) ->
Boolean): T? {
    return lastOrNull(predicate)
}
 * Returns the last element matching the given
[predicate], or `null` if no such element was found.
 * @kotlin.internal.InlineOnly
public inline fun <T>
List<T>.findLast(predicate: (T) -> Boolean): T? {
    return lastOrNull(predicate)
}
 * Returns first
element.
 * @throws [NoSuchElementException] if the collection is empty.
 * @public fun <T>
Iterable<T>.first(): T {
    when (this) {
        is List -> return this.first()
        else -> {
            val iterator =
iterator()
            if (!iterator.hasNext())
                throw NoSuchElementException("Collection is empty.")
            return iterator.next()
        }
    }
}
 * Returns first element.
 * @throws [NoSuchElementException]
if the list is empty.
 * @public fun <T> List<T>.first(): T {
    if (isEmpty())
        throw
NoSuchElementException("List is empty.")
    return this[0]
}
 * Returns the first element matching the
given [predicate].
 * @throws [NoSuchElementException] if no such element is found.
 * @public inline fun <T>
Iterable<T>.first(predicate: (T) -> Boolean): T {
    for (element in this) if (predicate(element)) return element
    throw NoSuchElementException("Collection contains no element matching the predicate.")
}
 * Returns
the first element, or `null` if the collection is empty.
 * @public fun <T> Iterable<T>.firstOrNull(): T? {
    when
(this) {
        is List -> {
            if (isEmpty())
                return null
            else
                return this[0]
        }
        else -> {
            val iterator = iterator()
            if (!iterator.hasNext())
                return null
            return iterator.next()
        }
    }
}
 * Returns the first element, or `null` if the list is empty.
 * @public
fun <T> List<T>.firstOrNull(): T? {
    return if (isEmpty()) null else this[0]
}
 * Returns the first element
matching the given [predicate], or `null` if element was not found.
 * @public inline fun <T>
Iterable<T>.firstOrNull(predicate: (T) -> Boolean): T? {
    for (element in this) if (predicate(element)) return
element
    return null
}
 * Returns an element at the given [index] or the result of calling the
[defaultValue] function if the [index] is out of bounds of this list.
 * @kotlin.internal.InlineOnly
public inline

```



```

fun <T> List<T>.getOrElse(index: Int, defaultValue: (Int) -> T): T {
    return if (index >= 0 && index <=
lastIndex) get(index) else defaultValue(index)
}

/** Returns an element at the given [index] or `null` if the
[index] is out of bounds of this list.
*/
public fun <T> List<T>.getOrNull(index: Int): T? {
    return if (index >=
0 && index <= lastIndex) get(index) else null
}

/** Returns first index of [element], or -1 if the collection
does not contain element.
*/
public fun <@kotlin.internal.OnlyInputTypes T> Iterable<T>.indexOf(element: T):
Int {
    if (this is List) return this.indexOf(element)
    var index = 0
    for (item in this) {
        checkIndexOverflow(index)
        if (element == item)
            return index
        index++
    }
    return -
1
}

/** Returns first index of [element], or -1 if the list does not contain element.
*/
@Suppress("EXTENSION_SHADOWED_BY_MEMBER") // false warning, extension takes precedence in
some cases
public fun <@kotlin.internal.OnlyInputTypes T> List<T>.indexOf(element: T): Int {
    return
indexOf(element)
}

/** Returns index of the first element matching the given [predicate], or -1 if the
collection does not contain such element.
*/
public inline fun <T> Iterable<T>.indexOfFirst(predicate: (T) ->
Boolean): Int {
    var index = 0
    for (item in this) {
        checkIndexOverflow(index)
        if
(predicate(item))
            return index
        index++
    }
    return -1
}

/** Returns index of the first
element matching the given [predicate], or -1 if the list does not contain such element.
*/
public inline fun <T>
List<T>.indexOfFirst(predicate: (T) -> Boolean): Int {
    var index = 0
    for (item in this) {
        if
(predicate(item))
            return index
        index++
    }
    return -1
}

/** Returns index of the last
element matching the given [predicate], or -1 if the collection does not contain such element.
*/
public inline fun
<T> Iterable<T>.indexOfLast(predicate: (T) -> Boolean): Int {
    var lastIndex = -1
    var index = 0
    for (item
in this) {
        checkIndexOverflow(index)
        if (predicate(item))
            lastIndex = index
        index++
    }
    return lastIndex
}

/** Returns index of the last element matching the given [predicate], or -1 if the list
does not contain such element.
*/
public inline fun <T> List<T>.indexOfLast(predicate: (T) -> Boolean): Int {
    val iterator = this.listIterator(size)
    while (iterator.hasPrevious()) {
        if (predicate(iterator.previous())) {
            return iterator.nextIndex()
        }
    }
    return -1
}

/** Returns the last element.
*/
@throws [NoSuchElementException] if the collection is empty.
public fun <T> Iterable<T>.last(): T {
    when (this)
{
        is List -> return this.last()
        else -> {
            val iterator = iterator()
            if (!iterator.hasNext())
                throw NoSuchElementException("Collection is empty.")
            var last = iterator.next()
            while
(iterator.hasNext())
                last = iterator.next()
            return last
        }
    }
}

/** Returns the last
element.
*/
@throws [NoSuchElementException] if the list is empty.
public fun <T> List<T>.last(): T {
    if (isEmpty())
        throw NoSuchElementException("List is empty.")
    return this[lastIndex]
}

/** Returns the last element matching the given [predicate].
*/
@throws [NoSuchElementException] if no such
element is found.
public inline fun <T> Iterable<T>.last(predicate: (T) -> Boolean): T {
    var last: T? =
null
    var found = false
    for (element in this) {
        if (predicate(element)) {
            last = element
            found = true
        }
    }
    if (!found) throw NoSuchElementException("Collection contains no element
matching the predicate.")
    @Suppress("UNCHECKED_CAST")
    return last as T
}

/** Returns the
last element matching the given [predicate].
*/
@throws [NoSuchElementException] if no such element is found.
public inline fun <T> List<T>.last(predicate: (T) -> Boolean): T {
    val iterator = this.listIterator(size)
    while (iterator.hasPrevious()) {
        val element = iterator.previous()
        if (predicate(element))
            return
element
    }
    throw NoSuchElementException("List contains no element matching the predicate.")
}

/** Returns last index of [element], or -1 if the collection does not contain element.
*/
public fun
<@kotlin.internal.OnlyInputTypes T> Iterable<T>.lastIndexOf(element: T): Int {
    if (this is List) return
this.lastIndexOf(element)
    var lastIndex = -1
    var index = 0
    for (item in this) {
        checkIndexOverflow(index)
        if (element == item)
            lastIndex = index
        index++
    }
    return
lastIndex
}

/** Returns last index of [element], or -1 if the list does not contain element.
*/
@Suppress("EXTENSION_SHADOWED_BY_MEMBER") // false warning, extension takes precedence in
some cases
public fun <@kotlin.internal.OnlyInputTypes T> List<T>.lastIndexOf(element: T): Int {
    return
lastIndexOf(element)
}

/** Returns the last element, or `null` if the collection is empty.
*/
public fun
<T> Iterable<T>.lastOrNull(): T? {
    when (this) {
        is List -> return if (isEmpty()) null else this[size - 1]
    }
}

```

```

else -> {
    val iterator = iterator()
    if (!iterator.hasNext()) return null
    var last = iterator.next()
    while (iterator.hasNext()) last = iterator.next()
    return last
}
}

/** Returns the last element, or `null` if the list is empty.
 *
 * @public fun <T> List<T>.lastOrNull(): T?
 *
 * {
 *     return if (isEmpty()) null else this[size - 1]
 * }
 */
/** Returns the last element matching the given [predicate], or `null` if no such element was found.
 *
 * @public inline fun <T> Iterable<T>.lastOrNull(predicate: (T) -> Boolean): T?
 *
 * {
 *     var last: T? = null
 *     for (element in this) {
 *         if (predicate(element)) last = element
 *     }
 *     return last
 * }
 */
/** Returns the last element matching the given [predicate], or `null` if no such element was found.
 *
 * @public inline fun <T> List<T>.lastOrNull(predicate: (T) -> Boolean): T?
 *
 * {
 *     val iterator = this.listIterator(size)
 *     while (iterator.hasPrevious()) {
 *         val element = iterator.previous()
 *         if (predicate(element)) return element
 *     }
 *     return null
 * }
 */
/** Returns a random element from this collection.
 *
 * @throws NoSuchElementException if this collection is empty.
 *
 * @since Kotlin("1.3")
 * @kotlin.internal.InlineOnly
 * @public inline fun <T> Collection<T>.random(): T
 *
 * {
 *     return random(Random)
 * }
 */
/** Returns a random element from this collection using the specified source of randomness.
 *
 * @throws NoSuchElementException if this collection is empty.
 *
 * @since Kotlin("1.3")
 * @public fun <T> Collection<T>.random(random: Random): T
 *
 * {
 *     if (isEmpty()) throw NoSuchElementException("Collection is empty.")
 *     return elementAt(random.nextInt(size))
 * }
 */
/** Returns a random element from this collection, or `null` if this collection is empty.
 *
 * @since Kotlin("1.3")
 * @ExperimentalStdlibApi
 * @kotlin.internal.InlineOnly
 * @public inline fun <T> Collection<T>.randomOrNull(): T?
 *
 * {
 *     return randomOrNull(Random)
 * }
 */
/** Returns a random element from this collection using the specified source of randomness, or `null` if this collection is empty.
 *
 * @since Kotlin("1.3")
 * @ExperimentalStdlibApi
 * @public fun <T> Collection<T>.randomOrNull(random: Random): T?
 *
 * {
 *     if (isEmpty()) return null
 *     return elementAt(random.nextInt(size))
 * }
 */
/** Returns the single element, or throws an exception if the collection is empty or has more than one element.
 *
 * @public fun <T> Iterable<T>.single(): T
 *
 * {
 *     when (this) {
 *         is List -> return this.single()
 *         else -> {
 *             val iterator = iterator()
 *             if (!iterator.hasNext()) throw NoSuchElementException("Collection is empty.")
 *             val single = iterator.next()
 *             if (iterator.hasNext()) throw IllegalArgumentException("Collection has more than one element.")
 *             return single
 *         }
 *     }
 * }
 */
/** Returns the single element, or throws an exception if the list is empty or has more than one element.
 *
 * @public fun <T> List<T>.single(): T
 *
 * {
 *     return when (size) {
 *         0 -> throw NoSuchElementException("List is empty.")
 *         1 -> this[0]
 *         else -> throw IllegalArgumentException("List has more than one element.")
 *     }
 * }
 */
/** Returns the single element matching the given [predicate], or throws exception if there is no or more than one matching element.
 *
 * @public inline fun <T> Iterable<T>.single(predicate: (T) -> Boolean): T
 *
 * {
 *     var single: T? = null
 *     var found = false
 *     for (element in this) {
 *         if (predicate(element)) {
 *             if (found) throw IllegalArgumentException("Collection contains more than one matching element.")
 *             single = element
 *             found = true
 *         }
 *     }
 *     if (!found) throw NoSuchElementException("Collection contains no element matching the predicate.")
 *     @Suppress("UNCHECKED_CAST") return single as T
 * }
 */
/** Returns single element, or `null` if the collection is empty or has more than one element.
 *
 * @public fun <T> Iterable<T>.singleOrNull(): T?
 *
 * {
 *     when (this) {
 *         is List -> return if (size == 1) this[0] else null
 *         else -> {
 *             val iterator = iterator()
 *             if (!iterator.hasNext()) return null
 *             val single = iterator.next()
 *             if (iterator.hasNext()) return null
 *             return single
 *         }
 *     }
 * }
 */
/** Returns single element, or `null` if the list is empty or has more than one element.
 *
 * @public fun <T> List<T>.singleOrNull(): T?
 *
 * {
 *     return if (size == 1) this[0] else null
 * }
 */
/** Returns the single element matching the given [predicate], or `null` if element was not found or more than one element was found.
 *
 * @public inline fun <T> Iterable<T>.singleOrNull(predicate: (T) -> Boolean): T?
 *
 * {
 *     var single: T? = null
 *     var found = false
 *     for (element in this) {
 *         if (predicate(element)) {
 *             if (found) return null
 *             single = element
 *             found = true
 *         }
 *     }
 *     if (!found) return null
 *     return single
 * }
 */
/** Returns a list containing all elements except first [n] elements.
 *
 * @throws IllegalArgumentException if [n] is negative.
 *
 * @public fun <T> List<T>.drop(n: Int): List<T>
 *
 * {
 *     if (n < 0) throw IllegalArgumentException("n is negative.")
 *     return if (n == 0) this else this.subList(n, size)
 * }
 */

```

```

\n * @sample samples.collections.Collections.Transformations.drop\n * \npublic fun <T> Iterable<T>.drop(n: Int):
List<T> {\n    require(n >= 0) { \"Requested element count $n is less than zero.\" }\n    if (n == 0) return toList()\n    val list: ArrayList<T>\n    if (this is Collection<*>) {\n        val resultSize = size - n\n        if (resultSize <= 0)\n            return emptyList()\n        if (resultSize == 1)\n            return listOf(last())\n        list = ArrayList<T>(resultSize)\n        if (this is List<T>) {\n            if (this is RandomAccess) {\n                for (index in n until size)\n                    list.add(this[index])\n            } else {\n                for (item in listIterator(n))\n                    list.add(item)\n            }\n        }\n        return list\n    }\n}\n\n\n * @throws IllegalArgumentException if [n] is negative.\n * \n * @sample samples.collections.Collections.Transformations.drop\n * \npublic fun <T> List<T>.dropLast(n: Int):
List<T> {\n    require(n >= 0) { \"Requested element count $n is less than zero.\" }\n    return take((size -
n).coerceAtLeast(0))\n}\n\n\n * Returns a list containing all elements except last elements that satisfy the given
[predicate].\n * \n * @sample samples.collections.Collections.Transformations.drop\n * \npublic inline fun <T>
List<T>.dropLastWhile(predicate: (T) -> Boolean): List<T> {\n    if (!isEmpty()) {\n        val iterator =
listIterator(size)\n        while (iterator.hasPrevious()) {\n            if (!predicate(iterator.previous())) {\n                return
take(iterator.nextIndex() + 1)\n            }\n        }\n    }\n    return emptyList()\n}\n\n\n * Returns a list containing
all elements except first elements that satisfy the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.drop\n * \npublic inline fun <T> Iterable<T>.dropWhile(predicate:
(T) -> Boolean): List<T> {\n    var yielding = false\n    val list = ArrayList<T>()\n    for (item in this)\n        if
(yielding)\n            list.add(item)\n        else if (!predicate(item)) {\n            list.add(item)\n            yielding = true\n        }\n    return list\n}\n\n\n * Returns a list containing only elements matching the given [predicate].\n * \npublic
inline fun <T> Iterable<T>.filter(predicate: (T) -> Boolean): List<T> {\n    return filterTo(ArrayList<T>(),
predicate)\n}\n\n\n * Returns a list containing only elements matching the given [predicate].\n * @param
[predicate] function that takes the index of an element and the element itself\n * and returns the result of predicate
evaluation on the element.\n * \npublic inline fun <T> Iterable<T>.filterIndexed(predicate: (index: Int, T) ->
Boolean): List<T> {\n    return filterIndexedTo(ArrayList<T>(), predicate)\n}\n\n\n * Appends all elements
matching the given [predicate] to the given [destination].\n * @param [predicate] function that takes the index of an
element and the element itself\n * and returns the result of predicate evaluation on the element.\n * \npublic inline
fun <T, C : MutableCollection<in T>> Iterable<T>.filterIndexedTo(destination: C, predicate: (index: Int, T) ->
Boolean): C {\n    forEachIndexed { index, element ->\n        if (predicate(index, element))
destination.add(element)\n    }\n    return destination\n}\n\n\n * Returns a list containing all elements that are
instances of specified type parameter R.\n * \npublic inline fun <reified R> Iterable<*>.filterIsInstance():
List<@kotlin.internal.NoInfer R> {\n    return filterIsInstanceTo(ArrayList<R>())\n}\n\n\n * Appends all
elements that are instances of specified type parameter R to the given [destination].\n * \npublic inline fun <reified
R, C : MutableCollection<in R>> Iterable<*>.filterIsInstanceTo(destination: C): C {\n    for (element in this) if
(element is R) destination.add(element)\n    return destination\n}\n\n\n * Returns a list containing all elements
not matching the given [predicate].\n * \npublic inline fun <T> Iterable<T>.filterNot(predicate: (T) -> Boolean):
List<T> {\n    return filterNotTo(ArrayList<T>(), predicate)\n}\n\n\n * Returns a list containing all elements that
are not `null`.\n * \npublic fun <T : Any> Iterable<T?>.filterNotNull(): List<T> {\n    return
filterNotNullTo(ArrayList<T>())\n}\n\n\n * Appends all elements that are not `null` to the given [destination].\n * \npublic fun <C : MutableCollection<in T>, T : Any> Iterable<T?>.filterNotNullTo(destination: C): C {\n    for
(element in this) if (element != null) destination.add(element)\n    return destination\n}\n\n\n * Appends all
elements not matching the given [predicate] to the given [destination].\n * \npublic inline fun <T, C :
MutableCollection<in T>> Iterable<T>.filterNotTo(destination: C, predicate: (T) -> Boolean): C {\n    for (element
in this) if (!predicate(element)) destination.add(element)\n    return destination\n}\n\n\n * Appends all elements
matching the given [predicate] to the given [destination].\n * \npublic inline fun <T, C : MutableCollection<in T>>
Iterable<T>.filterTo(destination: C, predicate: (T) -> Boolean): C {\n    for (element in this) if (predicate(element))
destination.add(element)\n    return destination\n}\n\n\n * Returns a list containing elements at indices in the

```

```

specified [indices] range.\n *^public fun <T> List<T>.slice(indices: IntRange): List<T> {\n  if
(indices.isEmpty()) return listOf()\n  return this.subList(indices.start, indices.endInclusive + 1).toList()\n}\n\n/**\n * Returns a list containing elements at specified [indices].\n *^public fun <T> List<T>.slice(indices:
Iterable<Int>): List<T> {\n  val size = indices.collectionSizeOrDefault(10)\n  if (size == 0) return emptyList()\n  val list = ArrayList<T>(size)\n  for (index in indices) {\n    list.add(get(index))\n  }\n  return list\n}\n\n/**\n * Returns a list containing first [n] elements.\n * \n * @throws IllegalArgumentException if [n] is negative.\n * \n *
@sample samples.collections.Collections.Transformations.take\n *^public fun <T> Iterable<T>.take(n: Int):
List<T> {\n  require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  if (n == 0) return
emptyList()\n  if (this is Collection<T>) {\n    if (n >= size) return toList()\n    if (n == 1) return
listOf(first())\n  }\n  var count = 0\n  val list = ArrayList<T>(n)\n  for (item in this) {\n    list.add(item)\n  }\n  if (++count == n)\n    break\n  }\n  return list.optimizeReadOnlyList()\n}\n\n/**\n * Returns a list containing
last [n] elements.\n * \n * @throws IllegalArgumentException if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.take\n *^public fun <T> List<T>.takeLast(n: Int): List<T> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n  if (n == 0) return emptyList()\n  val size =
size\n  if (n >= size) return toList()\n  if (n == 1) return listOf(last())\n  val list = ArrayList<T>(n)\n  if (this is
RandomAccess) {\n    for (index in size - n until size)\n      list.add(this[index])\n  } else {\n    for (item in
listIterator(size - n))\n      list.add(item)\n  }\n  return list\n}\n\n/**\n * Returns a list containing last elements
satisfying the given [predicate].\n * \n * @sample samples.collections.Collections.Transformations.take\n *^public
inline fun <T> List<T>.takeLastWhile(predicate: (T) -> Boolean): List<T> {\n  if (isEmpty())\n    return
emptyList()\n  val iterator = listIterator(size)\n  while (iterator.hasPrevious()) {\n    if
(!predicate(iterator.previous())) {\n      iterator.next()\n      val expectedSize = size - iterator.nextIndex()\n
      if (expectedSize == 0) return emptyList()\n      return ArrayList<T>(expectedSize).apply {\n        while
(iterator.hasNext())\n          add(iterator.next())\n        }\n      }\n    }\n  }\n  return toList()\n}\n\n/**\n *
Returns a list containing first elements satisfying the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.take\n *^public inline fun <T> Iterable<T>.takeWhile(predicate:
(T) -> Boolean): List<T> {\n  val list = ArrayList<T>()\n  for (item in this) {\n    if (!predicate(item))\n
break\n    list.add(item)\n  }\n  return list\n}\n\n/**\n * Reverses elements in the list in-place.\n *^public
expect fun <T> MutableList<T>.reverse(): Unit\n\n/**\n * Returns a list with elements in reversed order.\n
*^public fun <T> Iterable<T>.reversed(): List<T> {\n  if (this is Collection && size <= 1) return toList()\n  val
list = toMutableList()\n  list.reverse()\n  return list\n}\n\n/**\n * Sorts elements in the list in-place according to
natural sort order of the value returned by specified [selector] function.\n * \n * The sort is _stable_. It means that
equal elements preserve their order relative to each other after sorting.\n *^public inline fun <T, R :
Comparable<R>> MutableList<T>.sortBy(crossinline selector: (T) -> R?): Unit {\n  if (size > 1)
sortByWith(compareBy(selector))\n}\n\n/**\n * Sorts elements in the list in-place descending according to natural sort
order of the value returned by specified [selector] function.\n * \n * The sort is _stable_. It means that equal
elements preserve their order relative to each other after sorting.\n *^public inline fun <T, R : Comparable<R>>
MutableList<T>.sortByDescending(crossinline selector: (T) -> R?): Unit {\n  if (size > 1)
sortByWith(compareByDescending(selector))\n}\n\n/**\n * Sorts elements in the list in-place descending according to
their natural sort order.\n * \n * The sort is _stable_. It means that equal elements preserve their order relative to
each other after sorting.\n *^public fun <T : Comparable<T>> MutableList<T>.sortDescending(): Unit {\n
sortByWith(reverseOrder())\n}\n\n/**\n * Returns a list of all elements sorted according to their natural sort order.\n *
\n * The sort is _stable_. It means that equal elements preserve their order relative to each other after sorting.\n
*^public fun <T : Comparable<T>> Iterable<T>.sorted(): List<T> {\n  if (this is Collection) {\n    if (size <= 1)
return this.toList()\n    @Suppress(\"UNCHECKED_CAST\")\n    return (toArray<Comparable<T>>())
as Array<T>().apply { sort() }.asList()\n  }\n  return toMutableList().apply { sort() }\n}\n\n/**\n * Returns a list of
all elements sorted according to natural sort order of the value returned by specified [selector] function.\n * \n * The
sort is _stable_. It means that equal elements preserve their order relative to each other after sorting.\n *^public
inline fun <T, R : Comparable<R>> Iterable<T>.sortedBy(crossinline selector: (T) -> R?): List<T> {\n  return

```

sortedWith(compareBy(selector))\n\n/\*\*\n \* Returns a list of all elements sorted descending according to natural sort order of the value returned by specified [selector] function.\n \* \n \* The sort is \_stable\_. It means that equal elements preserve their order relative to each other after sorting.\n \*/\npublic inline fun <T, R : Comparable<R>> Iterable<T>.sortedByDescending(crossinline selector: (T) -> R?): List<T> {\n return sortedWith(compareByDescending(selector))\n}\n\n/\*\*\n \* Returns a list of all elements sorted descending according to their natural sort order.\n \* \n \* The sort is \_stable\_. It means that equal elements preserve their order relative to each other after sorting.\n \*/\npublic fun <T : Comparable<T>> Iterable<T>.sortedDescending(): List<T> {\n return sortedWith(reverseOrder())\n}\n\n/\*\*\n \* Returns a list of all elements sorted according to the specified [comparator].\n \* \n \* The sort is \_stable\_. It means that equal elements preserve their order relative to each other after sorting.\n \*/\npublic fun <T> Iterable<T>.sortedWith(comparator: Comparator<in T>): List<T> {\n if (this is Collection) {\n if (size <= 1) return this.toList()\n @SuppressWarnings("UNCHECKED\_CAST")\n return (toTypedArray<Any?>() as Array<T>).apply { sortWith(comparator) }.asList()\n }\n return toMutableList().apply { sortWith(comparator) }\n}\n\n/\*\*\n \* Returns an array of Boolean containing all of the elements of this collection.\n \*/\npublic fun Collection<Boolean>.toBooleanArray(): BooleanArray {\n val result = BooleanArray(size)\n var index = 0\n for (element in this)\n result[index++] = element\n return result\n}\n\n/\*\*\n \* Returns an array of Byte containing all of the elements of this collection.\n \*/\npublic fun Collection<Byte>.toByteArray(): ByteArray {\n val result = ByteArray(size)\n var index = 0\n for (element in this)\n result[index++] = element\n return result\n}\n\n/\*\*\n \* Returns an array of Char containing all of the elements of this collection.\n \*/\npublic fun Collection<Char>.toCharArray(): CharArray {\n val result = CharArray(size)\n var index = 0\n for (element in this)\n result[index++] = element\n return result\n}\n\n/\*\*\n \* Returns an array of Double containing all of the elements of this collection.\n \*/\npublic fun Collection<Double>.toDoubleArray(): DoubleArray {\n val result = DoubleArray(size)\n var index = 0\n for (element in this)\n result[index++] = element\n return result\n}\n\n/\*\*\n \* Returns an array of Float containing all of the elements of this collection.\n \*/\npublic fun Collection<Float>.toFloatArray(): FloatArray {\n val result = FloatArray(size)\n var index = 0\n for (element in this)\n result[index++] = element\n return result\n}\n\n/\*\*\n \* Returns an array of Int containing all of the elements of this collection.\n \*/\npublic fun Collection<Int>.toIntArray(): IntArray {\n val result = IntArray(size)\n var index = 0\n for (element in this)\n result[index++] = element\n return result\n}\n\n/\*\*\n \* Returns an array of Long containing all of the elements of this collection.\n \*/\npublic fun Collection<Long>.toLongArray(): LongArray {\n val result = LongArray(size)\n var index = 0\n for (element in this)\n result[index++] = element\n return result\n}\n\n/\*\*\n \* Returns an array of Short containing all of the elements of this collection.\n \*/\npublic fun Collection<Short>.toShortArray(): ShortArray {\n val result = ShortArray(size)\n var index = 0\n for (element in this)\n result[index++] = element\n return result\n}\n\n/\*\*\n \* Returns a [Map] containing key-value pairs provided by [transform] function\n \* applied to elements of the given collection.\n \* \n \* If any of two pairs would have the same key the last one gets added to the map.\n \* \n \* The returned map preserves the entry iteration order of the original collection.\n \* \n \* @sample samples.collections.Collections.Transformations.associate\n \*/\npublic inline fun <T, K, V> Iterable<T>.associate(transform: (T) -> Pair<K, V>): Map<K, V> {\n val capacity = mapCapacity(collectionSizeOrDefault(10)).coerceAtLeast(16)\n return associateTo(LinkedHashMap<K, V>(capacity), transform)\n}\n\n/\*\*\n \* Returns a [Map] containing the elements from the given collection indexed by the key\n \* returned from [keySelector] function applied to each element.\n \* \n \* If any two elements would have the same key returned by [keySelector] the last one gets added to the map.\n \* \n \* The returned map preserves the entry iteration order of the original collection.\n \* \n \* @sample samples.collections.Collections.Transformations.associateBy\n \*/\npublic inline fun <T, K> Iterable<T>.associateBy(keySelector: (T) -> K): Map<K, T> {\n val capacity = mapCapacity(collectionSizeOrDefault(10)).coerceAtLeast(16)\n return associateByTo(LinkedHashMap<K, T>(capacity), keySelector)\n}\n\n/\*\*\n \* Returns a [Map] containing the values provided by [valueTransform] and indexed by [keySelector] functions applied to elements of the given collection.\n \* \n \* If any two elements would have the same key returned by [keySelector] the last one gets added to the map.\n \* \n \* The returned map preserves

the entry iteration order of the original collection.

```

samples.collections.Collections.Transformations.associateByWithValueTransform
public inline fun <T, K, V>
Iterable<T>.associateBy(keySelector: (T) -> K, valueTransform: (T) -> V): Map<K, V> {
    val capacity =
    mapCapacity(collectionSizeOrDefault(10)).coerceAtLeast(16)
    return associateByTo(LinkedHashMap<K,
    V>(capacity), keySelector, valueTransform)
}

```

Populates and returns the [destination] mutable map with key-value pairs, where key is provided by the [keySelector] function applied to each element of the given collection and value is the element itself. If any two elements would have the same key returned by [keySelector] the last one gets added to the map.

```

samples.collections.Collections.Transformations.associateByTo
public inline fun <T, K, M : MutableMap<in
K, in T>> Iterable<T>.associateByTo(destination: M, keySelector: (T) -> K): M {
    for (element in this) {
        destination.put(keySelector(element), element)
    }
    return destination
}

```

Populates and returns the [destination] mutable map with key-value pairs, where key is provided by the [keySelector] function and value is provided by the [valueTransform] function applied to elements of the given collection. If any two elements would have the same key returned by [keySelector] the last one gets added to the map.

```

samples.collections.Collections.Transformations.associateByToWithValueTransform
public inline fun <T, K,
V, M : MutableMap<in K, in V>> Iterable<T>.associateByTo(destination: M, keySelector: (T) -> K,
valueTransform: (T) -> V): M {
    for (element in this) {
        destination.put(keySelector(element),
        valueTransform(element))
    }
    return destination
}

```

Populates and returns the [destination] mutable map with key-value pairs provided by [transform] function applied to each element of the given collection. If any of two pairs would have the same key the last one gets added to the map.

```

samples.collections.Collections.Transformations.associateTo
public inline fun <T, K, V, M : MutableMap<in
K, in V>> Iterable<T>.associateTo(destination: M, transform: (T) -> Pair<K, V>): M {
    for (element in this) {
        destination += transform(element)
    }
    return destination
}

```

Returns a [Map] where keys are elements from the given collection and values are produced by the [valueSelector] function applied to each element. If any two elements are equal, the last one gets added to the map. The returned map preserves the entry iteration order of the original collection.

```

samples.collections.Collections.Transformations.associateWith
@SinceKotlin("1.3")
public inline fun <K,
V> Iterable<K>.associateWith(valueSelector: (K) -> V): Map<K, V> {
    val result = LinkedHashMap<K,
    V>(mapCapacity(collectionSizeOrDefault(10)).coerceAtLeast(16))
    return associateWithTo(result,
    valueSelector)
}

```

Populates and returns the [destination] mutable map with key-value pairs for each element of the given collection, where key is the element itself and value is provided by the [valueSelector] function applied to that key. If any two elements are equal, the last one overwrites the former value in the map.

```

samples.collections.Collections.Transformations.associateWithTo
@SinceKotlin("1.3")
public inline fun <K, V, M : MutableMap<in K, in V>>
Iterable<K>.associateWithTo(destination: M, valueSelector: (K) -> V): M {
    for (element in this) {
        destination.put(element, valueSelector(element))
    }
    return destination
}

```

Appends all elements to the given [destination] collection.

```

public fun <T, C : MutableCollection<in T>>
Iterable<T>.toCollection(destination: C): C {
    for (item in this) {
        destination.add(item)
    }
    return destination
}

```

Returns a [HashSet] of all elements.

```

public fun <T> Iterable<T>.toHashSet():
HashSet<T> {
    return toCollection(HashSet<T>(mapCapacity(collectionSizeOrDefault(12))))
}

```

Returns a [List] containing all elements.

```

public fun <T> Iterable<T>.toList(): List<T> {
    if (this is
Collection) {
        return when (size) {
            0 -> emptyList()
            1 -> listOf(if (this is List) get(0) else
iterator().next())
            else -> this.toMutableList()
        }
    }
    return
this.toMutableList().optimizeReadOnlyList()
}

```

Returns a [MutableList] filled with all elements of this collection.

```

public fun <T> Iterable<T>.toMutableList(): MutableList<T> {
    if (this is Collection<T>)
return this.toMutableList()
    return toCollection(ArrayList<T>())
}

```

Returns a [MutableList] filled with all elements of this collection.

```

public fun <T> Collection<T>.toMutableList(): MutableList<T> {
    return ArrayList(this)
}

```

Returns a [Set] of all elements. The returned set preserves the element

```

iteration order of the original collection.\n */\npublic fun <T> Iterable<T>.toSet(): Set<T> {\n    if (this is Collection) {\n        return when (size) {\n            0 -> emptySet()\n            1 -> setOf(if (this is List) this[0] else iterator().next())\n        } else -> toCollection(LinkedHashSet<T>(mapCapacity(size)))\n    } else -> toCollection(LinkedHashSet<T>()).optimizeReadOnlySet()\n}\n\n/**\n * Returns a single list of all elements yielded from results of [transform] function being invoked on each element of original collection.\n * \n * @sample samples.collections.Collections.Transformations.flatMap\n */\npublic inline fun <T, R> Iterable<T>.flatMap(transform: (T) -> Iterable<R>): List<R> {\n    return flatMapTo(ArrayList<R>(), transform)\n}\n\n/**\n * Appends all elements yielded from results of [transform] function being invoked on each element of original collection, to the given [destination].\n */\npublic inline fun <T, R, C : MutableCollection<in R>> Iterable<T>.flatMapTo(destination: C, transform: (T) -> Iterable<R>): C {\n    for (element in this) {\n        val list = transform(element)\n        destination.addAll(list)\n    }\n    return destination\n}\n\n/**\n * Groups elements of the original collection by the key returned by the given [keySelector] function\n * applied to each element and returns a map where each group key is associated with a list of corresponding elements.\n * \n * The returned map preserves the entry iteration order of the keys produced from the original collection.\n * \n * @sample samples.collections.Collections.Transformations.groupBy\n */\npublic inline fun <T, K> Iterable<T>.groupBy(keySelector: (T) -> K): Map<K, List<T>> {\n    return groupByTo(LinkedHashMap<K, MutableList<T>>(), keySelector)\n}\n\n/**\n * Groups values returned by the [valueTransform] function applied to each element of the original collection\n * by the key returned by the given [keySelector] function applied to the element\n * and returns a map where each group key is associated with a list of corresponding values.\n * \n * The returned map preserves the entry iteration order of the keys produced from the original collection.\n * \n * @sample samples.collections.Collections.Transformations.groupByKeysAndValues\n */\npublic inline fun <T, K, V> Iterable<T>.groupBy(keySelector: (T) -> K, valueTransform: (T) -> V): Map<K, List<V>> {\n    return groupByTo(LinkedHashMap<K, MutableList<V>>(), keySelector, valueTransform)\n}\n\n/**\n * Groups elements of the original collection by the key returned by the given [keySelector] function\n * applied to each element and puts to the [destination] map each group key associated with a list of corresponding elements.\n * \n * @return The [destination] map.\n * \n * @sample samples.collections.Collections.Transformations.groupBy\n */\npublic inline fun <T, K, M : MutableMap<in K, MutableList<T>>> Iterable<T>.groupByTo(destination: M, keySelector: (T) -> K): M {\n    for (element in this) {\n        val key = keySelector(element)\n        val list = destination.getOrPut(key) { ArrayList<T>() }\n        list.add(element)\n    }\n    return destination\n}\n\n/**\n * Groups values returned by the [valueTransform] function applied to each element of the original collection\n * by the key returned by the given [keySelector] function applied to the element\n * and puts to the [destination] map each group key associated with a list of corresponding values.\n * \n * @return The [destination] map.\n * \n * @sample samples.collections.Collections.Transformations.groupByKeysAndValues\n */\npublic inline fun <T, K, V, M : MutableMap<in K, MutableList<V>>> Iterable<T>.groupByTo(destination: M, keySelector: (T) -> K, valueTransform: (T) -> V): M {\n    for (element in this) {\n        val key = keySelector(element)\n        val list = destination.getOrPut(key) { ArrayList<V>() }\n        list.add(valueTransform(element))\n    }\n    return destination\n}\n\n/**\n * Creates a [Grouping] source from a collection to be used later with one of group-and-fold operations\n * using the specified [keySelector] function to extract a key from each element.\n * \n * @sample samples.collections.Grouping.groupingByEachCount\n */\n@SinceKotlin("1.1")\npublic inline fun <T, K> Iterable<T>.groupingBy(crossinline keySelector: (T) -> K): Grouping<T, K> {\n    return object : Grouping<T, K> {\n        override fun sourceIterator(): Iterator<T> = this@groupingBy.iterator()\n        override fun keyOf(element: T): K = keySelector(element)\n    }\n}\n\n/**\n * Returns a list containing the results of applying the given [transform] function\n * to each element in the original collection.\n * \n * @sample samples.collections.Collections.Transformations.map\n */\npublic inline fun <T, R> Iterable<T>.map(transform: (T) -> R): List<R> {\n    return mapTo(ArrayList<R>(collectionSizeOrDefault(10)), transform)\n}\n\n/**\n * Returns a list containing the results of applying the given [transform] function\n * to each element and its index in the original collection.\n * \n * @param [transform] function that takes the index of an element and the element itself\n * and returns the result of the transform applied to the element.\n */\npublic inline fun <T, R>

```

```

Iterable<T>.mapIndexed(transform: (index: Int, T) -> R): List<R> {\n  return
mapIndexedTo(ArrayList<R>(collectionSizeOrDefault(10)), transform)\n}\n\n/**\n * Returns a list containing only
the non-null results of applying the given [transform] function\n * to each element and its index in the original
collection.\n * @param [transform] function that takes the index of an element and the element itself\n * and returns
the result of the transform applied to the element.\n */\npublic inline fun <T, R : Any>
Iterable<T>.mapIndexedNotNull(transform: (index: Int, T) -> R?): List<R> {\n  return
mapIndexedNotNullTo(ArrayList<R>(), transform)\n}\n\n/**\n * Applies the given [transform] function to each
element and its index in the original collection\n * and appends only the non-null results to the given [destination].\n
* @param [transform] function that takes the index of an element and the element itself\n * and returns the result of
the transform applied to the element.\n */\npublic inline fun <T, R : Any, C : MutableCollection<in R>>
Iterable<T>.mapIndexedNotNullTo(destination: C, transform: (index: Int, T) -> R?): C {\n  forEachIndexed {
index, element -> transform(index, element)?.let { destination.add(it) } }\n  return destination\n}\n\n/**\n *
Applies the given [transform] function to each element and its index in the original collection\n * and appends the
results to the given [destination].\n * @param [transform] function that takes the index of an element and the
element itself\n * and returns the result of the transform applied to the element.\n */\npublic inline fun <T, R, C :
MutableCollection<in R>> Iterable<T>.mapIndexedTo(destination: C, transform: (index: Int, T) -> R): C {\n  var
index = 0\n  for (item in this)\n    destination.add(transform(checkIndexOverflow(index++), item))\n  return
destination\n}\n\n/**\n * Returns a list containing only the non-null results of applying the given [transform]
function\n * to each element in the original collection.\n */\npublic inline fun <T, R : Any>
Iterable<T>.mapNotNull(transform: (T) -> R?): List<R> {\n  return mapNotNullTo(ArrayList<R>(),
transform)\n}\n\n/**\n * Applies the given [transform] function to each element in the original collection\n * and
appends only the non-null results to the given [destination].\n */\npublic inline fun <T, R : Any, C :
MutableCollection<in R>> Iterable<T>.mapNotNullTo(destination: C, transform: (T) -> R?): C {\n  forEach {
element -> transform(element)?.let { destination.add(it) } }\n  return destination\n}\n\n/**\n * Applies the given
[transform] function to each element of the original collection\n * and appends the results to the given
[destination].\n */\npublic inline fun <T, R, C : MutableCollection<in R>> Iterable<T>.mapTo(destination: C,
transform: (T) -> R): C {\n  for (item in this)\n    destination.add(transform(item))\n  return
destination\n}\n\n/**\n * Returns a lazy [Iterable] that wraps each element of the original collection\n * into an
[IndexValue] containing the index of that element and the element itself.\n */\npublic fun <T>
Iterable<T>.withIndex(): Iterable<IndexedValue<T>> {\n  return IndexingIterable { iterator() }\n}\n\n/**\n *
Returns a list containing only distinct elements from the given collection.\n * \n * The elements in the resulting list
are in the same order as they were in the source collection.\n * \n * @sample
samples.collections.Collections.Transformations.distinctAndDistinctBy\n */\npublic fun <T> Iterable<T>.distinct():
List<T> {\n  return this.toMutableSet().toList()\n}\n\n/**\n * Returns a list containing only elements from the
given collection\n * having distinct keys returned by the given [selector] function.\n * \n * The elements in the
resulting list are in the same order as they were in the source collection.\n * \n * @sample
samples.collections.Collections.Transformations.distinctAndDistinctBy\n */\npublic inline fun <T, K>
Iterable<T>.distinctBy(selector: (T) -> K): List<T> {\n  val set = HashSet<K>()\n  val list = ArrayList<T>()\n
for (e in this) {\n    val key = selector(e)\n    if (set.add(key))\n      list.add(e)\n  }\n  return list\n}\n\n/**\n *
Returns a set containing all elements that are contained by both this collection and the specified collection.\n * \n *
The returned set preserves the element iteration order of the original collection.\n * \n * To get a set containing all
elements that are contained at least in one of these collections use [union].\n */\npublic infix fun <T>
Iterable<T>.intersect(other: Iterable<T>): Set<T> {\n  val set = this.toMutableSet()\n  set.retainAll(other)\n
return set\n}\n\n/**\n * Returns a set containing all elements that are contained by this collection and not contained
by the specified collection.\n * \n * The returned set preserves the element iteration order of the original
collection.\n */\npublic infix fun <T> Iterable<T>.subtract(other: Iterable<T>): Set<T> {\n  val set =
this.toMutableSet()\n  set.removeAll(other)\n  return set\n}\n\n/**\n * Returns a mutable set containing all
distinct elements from the given collection.\n * \n * The returned set preserves the element iteration order of the

```



```

original collection.\n *\npublic fun <T> Iterable<T>.toMutableSet(): MutableSet<T> {\n    return when (this) {\n        is Collection<T> -> LinkedHashSet(this)\n        else -> toCollection(LinkedHashSet<T>())\n    }\n}\n\n*\n * Returns a set containing all distinct elements from both collections.\n * \n * The returned set preserves the element iteration order of the original collection.\n * Those elements of the [other] collection that are unique are iterated in the end\n * in the order of the [other] collection.\n * \n * To get a set containing all elements that are contained in both collections use [intersect].\n *\npublic infix fun <T> Iterable<T>.union(other: Iterable<T>): Set<T> {\n    val set = this.toMutableSet()\n    set.addAll(other)\n    return set\n}\n\n*\n * Returns `true` if all elements match the given [predicate].\n * \n * @sample samples.collections.Collections.Aggregates.all\n *\npublic inline fun <T> Iterable<T>.all(predicate: (T) -> Boolean): Boolean {\n    if (this is Collection && isEmpty()) return true\n    for (element in this) if (!predicate(element)) return false\n    return true\n}\n\n*\n * Returns `true` if collection has at least one element.\n * \n * @sample samples.collections.Collections.Aggregates.any\n *\npublic fun <T> Iterable<T>.any(): Boolean {\n    if (this is Collection) return !isEmpty()\n    return iterator().hasNext()\n}\n\n*\n * Returns `true` if at least one element matches the given [predicate].\n * \n * @sample samples.collections.Collections.Aggregates.anyWithPredicate\n *\npublic inline fun <T> Iterable<T>.any(predicate: (T) -> Boolean): Boolean {\n    if (this is Collection && isEmpty()) return false\n    for (element in this) if (predicate(element)) return true\n    return false\n}\n\n*\n * Returns the number of elements in this collection.\n *\npublic fun <T> Iterable<T>.count(): Int {\n    if (this is Collection) return size\n    var count = 0\n    for (element in this) checkCountOverflow(++count)\n    return count\n}\n\n*\n * Returns the number of elements in this collection.\n *\n@kotlin.internal.InlineOnly\npublic inline fun <T> Collection<T>.count(): Int {\n    return size\n}\n\n*\n * Returns the number of elements matching the given [predicate].\n *\npublic inline fun <T> Iterable<T>.count(predicate: (T) -> Boolean): Int {\n    if (this is Collection && isEmpty()) return 0\n    var count = 0\n    for (element in this) if (predicate(element)) checkCountOverflow(++count)\n    return count\n}\n\n*\n * Accumulates value starting with [initial] value and applying [operation] from left to right to current accumulator value and each element.\n *\npublic inline fun <T, R> Iterable<T>.fold(initial: R, operation: (acc: R, T) -> R): R {\n    var accumulator = initial\n    for (element in this) accumulator = operation(accumulator, element)\n    return accumulator\n}\n\n*\n * Accumulates value starting with [initial] value and applying [operation] from left to right\n * to current accumulator value and each element with its index in the original collection.\n * @param [operation] function that takes the index of an element, current accumulator value\n * and the element itself, and calculates the next accumulator value.\n *\npublic inline fun <T, R> Iterable<T>.foldIndexed(initial: R, operation: (index: Int, acc: R, T) -> R): R {\n    var index = 0\n    var accumulator = initial\n    for (element in this) accumulator = operation(checkIndexOverflow(index++), accumulator, element)\n    return accumulator\n}\n\n*\n * Accumulates value starting with [initial] value and applying [operation] from right to left to each element and current accumulator value.\n *\npublic inline fun <T, R> List<T>.foldRight(initial: R, operation: (T, acc: R) -> R): R {\n    var accumulator = initial\n    if (!isEmpty()) {\n        val iterator = listIterator(size)\n        while (iterator.hasPrevious()) {\n            accumulator = operation(iterator.previous(), accumulator)\n        }\n    }\n    return accumulator\n}\n\n*\n * Accumulates value starting with [initial] value and applying [operation] from right to left\n * to each element with its index in the original list and current accumulator value.\n * @param [operation] function that takes the index of an element, the element itself\n * and current accumulator value, and calculates the next accumulator value.\n *\npublic inline fun <T, R> List<T>.foldRightIndexed(initial: R, operation: (index: Int, T, acc: R) -> R): R {\n    var accumulator = initial\n    if (!isEmpty()) {\n        val iterator = listIterator(size)\n        while (iterator.hasPrevious()) {\n            val index = iterator.previousIndex()\n            accumulator = operation(index, iterator.previous(), accumulator)\n        }\n    }\n    return accumulator\n}\n\n*\n * Performs the given [action] on each element.\n *\n@kotlin.internal.HidesMembers\npublic inline fun <T> Iterable<T>.forEach(action: (T) -> Unit): Unit {\n    for (element in this) action(element)\n}\n\n*\n * Performs the given [action] on each element, providing sequential index with the element.\n * @param [action] function that takes the index of an element and the element itself\n * and performs the desired action on the element.\n *\npublic inline fun <T> Iterable<T>.forEachIndexed(action: (index: Int, T) -> Unit): Unit {\n    var index = 0\n    for (item in this) action(checkIndexOverflow(index++), item)\n}\n\n*\n * Returns the largest element or `null` if there are no

```

```

elements.\n * \n * If any of elements is `NaN` returns `NaN`.\n *\n@SinceKotlin("1.1")\npublic fun
Iterable<Double>.max(): Double? {\n    val iterator = iterator()\n    if (!iterator.hasNext()) return null\n    var max =
iterator.next()\n    if (max.isNaN()) return max\n    while (iterator.hasNext()) {\n        val e = iterator.next()\n        if
(e.isNaN()) return e\n        if (max < e) max = e\n    }\n    return max\n}\n\n/**\n * Returns the largest element or
`null` if there are no elements.\n *\n * If any of elements is `NaN` returns `NaN`.\n *\n@SinceKotlin("1.1")\npublic fun
Iterable<Float>.max(): Float? {\n    val iterator = iterator()\n    if
(!iterator.hasNext()) return null\n    var max = iterator.next()\n    if (max.isNaN()) return max\n    while
(iterator.hasNext()) {\n        val e = iterator.next()\n        if (e.isNaN()) return e\n        if (max < e) max = e\n    }\n
return max\n}\n\n/**\n * Returns the largest element or `null` if there are no elements.\n *\n@SinceKotlin("1.1")\npublic fun
<T> : Comparable<T>> Iterable<T>.max(): T? {\n    val iterator = iterator()\n    if (!iterator.hasNext()) return null\n    var
max = iterator.next()\n    while (iterator.hasNext()) {\n        val e = iterator.next()\n        if (max < e) max = e\n    }\n
return max\n}\n\n/**\n * Returns the first element yielding the largest value of the given function or `null` if there
are no elements.\n *\n * @sample samples.collections.Collections.Aggregates.maxBy\n *\n@SinceKotlin("1.1")\npublic inline fun
<T, R : Comparable<R>> Iterable<T>.maxBy(selector: (T) -> R): T? {\n    val iterator = iterator()\n    if
(!iterator.hasNext()) return null\n    var maxElem = iterator.next()\n    if (!iterator.hasNext()) return maxElem\n    var
maxValue = selector(maxElem)\n    do {\n        val e = iterator.next()\n        val v = selector(e)\n        if (maxValue <
v) {\n            maxElem = e\n            maxValue = v\n        }\n    } while (iterator.hasNext())\n    return
maxElem\n}\n\n/**\n * Returns the first element having the largest value according to the provided [comparator] or
`null` if there are no elements.\n *\n@SinceKotlin("1.1")\npublic fun <T> Iterable<T>.maxWith(comparator: Comparator<in T>): T? {\n
val iterator = iterator()\n    if (!iterator.hasNext()) return null\n    var max = iterator.next()\n    while
(iterator.hasNext()) {\n        val e = iterator.next()\n        if (comparator.compare(max, e) < 0) max = e\n    }\n
return max\n}\n\n/**\n * Returns the smallest element or `null` if there are no elements.\n *\n * If any of elements
is `NaN` returns `NaN`.\n *\n@SinceKotlin("1.1")\npublic fun Iterable<Double>.min(): Double? {\n    val iterator
= iterator()\n    if (!iterator.hasNext()) return null\n    var min = iterator.next()\n    if (min.isNaN()) return min\n
while (iterator.hasNext()) {\n        val e = iterator.next()\n        if (e.isNaN()) return e\n        if (min > e) min = e\n
}\n    return min\n}\n\n/**\n * Returns the smallest element or `null` if there are no elements.\n *\n * If any of
elements is `NaN` returns `NaN`.\n *\n@SinceKotlin("1.1")\npublic fun Iterable<Float>.min(): Float? {\n    val
iterator = iterator()\n    if (!iterator.hasNext()) return null\n    var min = iterator.next()\n    if (min.isNaN()) return
min\n    while (iterator.hasNext()) {\n        val e = iterator.next()\n        if (e.isNaN()) return e\n        if (min > e) min
= e\n    }\n    return min\n}\n\n/**\n * Returns the smallest element or `null` if there are no elements.\n *\n@SinceKotlin("1.1")\npublic
fun <T : Comparable<T>> Iterable<T>.min(): T? {\n    val iterator = iterator()\n    if (!iterator.hasNext()) return
null\n    var min = iterator.next()\n    while (iterator.hasNext()) {\n        val e = iterator.next()\n        if (min > e) min
= e\n    }\n    return min\n}\n\n/**\n * Returns the first element yielding the smallest value of the given function or
`null` if there are no elements.\n *\n * @sample samples.collections.Collections.Aggregates.minBy\n *\n@SinceKotlin("1.1")\npublic
inline fun <T, R : Comparable<R>> Iterable<T>.minBy(selector: (T) -> R): T? {\n    val iterator = iterator()\n    if
(!iterator.hasNext()) return null\n    var minElem = iterator.next()\n    if (!iterator.hasNext()) return minElem\n    var
minValue = selector(minElem)\n    do {\n        val e = iterator.next()\n        val v = selector(e)\n        if (minValue >
v) {\n            minElem = e\n            minValue = v\n        }\n    } while (iterator.hasNext())\n    return
minElem\n}\n\n/**\n * Returns the first element having the smallest value according to the provided [comparator]
or `null` if there are no elements.\n *\n@SinceKotlin("1.1")\npublic fun <T> Iterable<T>.minWith(comparator: Comparator<in T>): T?
{\n    val iterator = iterator()\n    if (!iterator.hasNext()) return null\n    var min = iterator.next()\n    while
(iterator.hasNext()) {\n        val e = iterator.next()\n        if (comparator.compare(min, e) > 0) min = e\n    }\n
return min\n}\n\n/**\n * Returns `true` if the collection has no elements.\n *\n * @sample
samples.collections.Collections.Aggregates.none\n *\n@SinceKotlin("1.1")\npublic fun <T> Iterable<T>.none(): Boolean {\n    if (this
is Collection) return isEmpty()\n    return !iterator().hasNext()\n}\n\n/**\n * Returns `true` if no elements match the
given [predicate].\n *\n * @sample samples.collections.Collections.Aggregates.noneWithPredicate\n *\n@SinceKotlin("1.1")\npublic
inline fun <T> Iterable<T>.none(predicate: (T) -> Boolean): Boolean {\n    if (this is Collection && isEmpty())\n        return true\n    for (element in this) if (predicate(element)) return false\n    return true\n}\n\n/**\n * Performs the

```

```

given [action] on each element and returns the collection itself afterwards.
@SinceKotlin("1.1")
public inline fun <T, C : Iterable<T>> C.onEach(action: (T) -> Unit): C {
    return apply { for (element in this)
        action(element) }
}

```

Accumulates value starting with the first element and applying [operation] from left to right to current accumulator value and each element.

```

@sample
samples.collections.Collections.Aggregates.reduce

```

```

public inline fun <S, T : S> Iterable<T>.reduce(operation:
(acc: S, T) -> S): S {
    val iterator = this.iterator()
    if (!iterator.hasNext()) throw
        UnsupportedOperationException("Empty collection can't be reduced.")
    var accumulator: S = iterator.next()
    while (iterator.hasNext()) {
        accumulator = operation(accumulator, iterator.next())
    }
    return accumulator
}

```

Accumulates value starting with the first element and applying [operation] from left to right to current accumulator value and each element with its index in the original collection.

```

@param
[operation] function that takes the index of an element, current accumulator value
and the element itself and calculates the next accumulator value.
@sample samples.collections.Collections.Aggregates.reduce

```

```

public inline fun <S, T : S> Iterable<T>.reduceIndexed(operation: (index: Int, acc: S, T) -> S): S {
    val iterator = this.iterator()
    if (!iterator.hasNext()) throw UnsupportedOperationException("Empty collection can't
        be reduced.")
    var index = 1
    var accumulator: S = iterator.next()
    while (iterator.hasNext()) {
        accumulator = operation(checkIndexOverflow(index++), accumulator, iterator.next())
    }
    return accumulator
}

```

Accumulates value starting with the first element and applying [operation] from left to right to current accumulator value and each element. Returns null if the collection is empty.

```

@sample
samples.collections.Collections.Aggregates.reduceOrNull

```

```

@SinceKotlin("1.3")
@ExperimentalStdlibApi
public inline fun <S, T : S>
Iterable<T>.reduceOrNull(operation: (acc: S, T) -> S): S? {
    val iterator = this.iterator()
    if (!iterator.hasNext()) return null
    var accumulator: S = iterator.next()
    while (iterator.hasNext()) {
        accumulator = operation(accumulator, iterator.next())
    }
    return accumulator
}

```

Accumulates value starting with last element and applying [operation] from right to left to each element and current accumulator value.

```

@sample samples.collections.Collections.Aggregates.reduceRight

```

```

public inline fun <S, T : S>
List<T>.reduceRight(operation: (T, acc: S) -> S): S {
    val iterator = listIterator(size)
    if (!iterator.hasPrevious())
        throw UnsupportedOperationException("Empty list can't be reduced.")
    var accumulator: S = iterator.previous()
    while (iterator.hasPrevious()) {
        accumulator =
            operation(iterator.previous(), accumulator)
    }
    return accumulator
}

```

Accumulates value starting with last element and applying [operation] from right to left to each element with its index in the original list and current accumulator value.

```

@param [operation] function that takes the index of an element, the element itself
and current accumulator value, and calculates the next accumulator value.
@sample
samples.collections.Collections.Aggregates.reduceRight

```

```

public inline fun <S, T : S>
List<T>.reduceRightIndexed(operation: (index: Int, T, acc: S) -> S): S {
    val iterator = listIterator(size)
    if (!iterator.hasPrevious())
        throw UnsupportedOperationException("Empty list can't be reduced.")
    var accumulator: S = iterator.previous()
    while (iterator.hasPrevious()) {
        val index = iterator.previousIndex()
        accumulator = operation(index, iterator.previous(), accumulator)
    }
    return accumulator
}

```

Accumulates value starting with last element and applying [operation] from right to left to each element and current accumulator value. Returns null if the list is empty.

```

@sample
samples.collections.Collections.Aggregates.reduceRightOrNull

```

```

@SinceKotlin("1.3")
@ExperimentalStdlibApi
public inline fun <S, T : S>
List<T>.reduceRightOrNull(operation: (T, acc: S) -> S): S? {
    val iterator = listIterator(size)
    if (!iterator.hasPrevious())
        return null
    var accumulator: S = iterator.previous()
    while (iterator.hasPrevious()) {
        accumulator = operation(iterator.previous(), accumulator)
    }
    return accumulator
}

```

Returns a list containing successive accumulation values generated by applying [operation] from left to right to each element and current accumulator value that starts with [initial] value.

```

Note that `acc` value passed to [operation] function should not be mutated; otherwise it would affect the
previous value in resulting list.
@param [operation] function that takes current accumulator value and an

```

element, and calculates the next accumulator value.

```

    * @sample
    samples.collections.Collections.Aggregates.scan
    * ^\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic
    inline fun <T, R> Iterable<T>.scan(initial: R, operation: (acc: R, T) -> R): List<R> {
    \n    val estimatedSize =
    collectionSizeOrDefault(9)\n    if (estimatedSize == 0) return listOf(initial)\n    val result =
    ArrayList<R>(estimatedSize + 1).apply { add(initial) }\n    var accumulator = initial\n    for (element in this) {
    \n    accumulator = operation(accumulator, element)\n    result.add(accumulator)\n    }\n    return result\n    }\n\n/**
    * Returns a list containing successive accumulation values generated by applying [operation] from left to right
    * to each element, its index in the original collection and current accumulator value that starts with [initial] value.
    * Note that `acc` value passed to [operation] function should not be mutated;
    * otherwise it would affect the previous value in resulting list.
    * @param [operation] function that takes the index of an element, current accumulator value
    * and the element itself, and calculates the next accumulator value.
    * @sample
    samples.collections.Collections.Aggregates.scan
    * ^\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic
    inline fun <T, R> Iterable<T>.scanIndexed(initial: R, operation: (index: Int, acc: R, T) -> R): List<R> {
    \n    val estimatedSize = collectionSizeOrDefault(9)\n    if (estimatedSize == 0) return listOf(initial)\n    val result =
    ArrayList<R>(estimatedSize + 1).apply { add(initial) }\n    var index = 0\n    var accumulator = initial\n    for
    (element in this) {
    \n    accumulator = operation(index++, accumulator, element)\n    result.add(accumulator)\n
    }\n    return result\n    }\n\n/**
    * Returns a list containing successive accumulation values generated by applying
    [operation] from left to right
    * to each element and current accumulator value that starts with the first element of
    this collection.
    * Note that `acc` value passed to [operation] function should not be mutated;
    * otherwise it would affect the previous value in resulting list.
    * @param [operation] function that takes current accumulator value and the element, and calculates the next accumulator value.
    * @sample
    samples.collections.Collections.Aggregates.scanReduce
    * ^\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun <S, T : S>
    Iterable<T>.scanReduce(operation: (acc: S, T) -> S): List<S> {
    \n    val iterator = this.iterator()\n    if
    (!iterator.hasNext()) return emptyList()\n    var accumulator: S = iterator.next()\n    val result =
    ArrayList<S>(collectionSizeOrDefault(10)).apply { add(accumulator) }\n    while (iterator.hasNext()) {
    \n    accumulator = operation(accumulator, iterator.next())\n    result.add(accumulator)\n
    }\n    return
    result\n    }\n\n/**
    * Returns a list containing successive accumulation values generated by applying [operation] from
    left to right
    * to each element, its index in the original collection and current accumulator value that starts with the
    first element of this collection.
    * Note that `acc` value passed to [operation] function should not be mutated;
    * otherwise it would affect the previous value in resulting list.
    * @param [operation] function that takes the index of an element, current accumulator value
    * and the element itself, and calculates the next accumulator value.
    * @sample
    samples.collections.Collections.Aggregates.scanReduce
    * ^\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun <S, T : S>
    Iterable<T>.scanReduceIndexed(operation: (index: Int, acc: S, T) -> S): List<S> {
    \n    val iterator = this.iterator()\n
    if (!iterator.hasNext()) return emptyList()\n    var accumulator: S = iterator.next()\n    val result =
    ArrayList<S>(collectionSizeOrDefault(10)).apply { add(accumulator) }\n    var index = 1\n    while
    (iterator.hasNext()) {
    \n    accumulator = operation(index++, accumulator, iterator.next())\n
    result.add(accumulator)\n    }\n    return result\n    }\n\n/**
    * Returns the sum of all values produced by [selector] function applied to each element in the collection.
    * ^\npublic inline fun <T> Iterable<T>.sumBy(selector: (T) -> Int): Int {
    \n    var sum: Int = 0\n    for (element in this) {
    \n    sum += selector(element)\n    }\n    return
    sum\n    }\n\n/**
    * Returns the sum of all values produced by [selector] function applied to each element in the
    collection.
    * ^\npublic inline fun <T> Iterable<T>.sumByDouble(selector: (T) -> Double): Double {
    \n    var sum:
    Double = 0.0\n    for (element in this) {
    \n    sum += selector(element)\n    }\n    return sum\n    }\n\n/**
    * Returns an original collection containing all the non-`null` elements, throwing an [IllegalArgumentException] if there are
    any `null` elements.
    * ^\npublic fun <T : Any> Iterable<T?>.requireNonNulls(): Iterable<T> {
    \n    for (element in
    this) {
    \n    if (element == null) {
    \n    throw IllegalArgumentException("null element found in $this.")\n
    }\n    }\n    @Suppress("UNCHECKED_CAST")\n    return this as Iterable<T>
    }\n\n/**
    * Returns an original

```

collection containing all the non-`null` elements, throwing an [IllegalArgumentException] if there are any `null` elements.

```

public fun <T : Any> List<T?.>.requireNonNulls(): List<T> {
    for (element in this) {
        if (element == null) {
            throw IllegalArgumentException("null element found in $this.")
        }
    }
    @Suppress("UNCHECKED_CAST")
    return this as List<T>
}

```

\* Splits this collection into a list of lists each not exceeding the given [size].

\* The last list in the resulting list may have less elements than the given [size].

\* @param size the number of elements to take in each list, must be positive and can be greater than the number of elements in this collection.

@sample

```

samples.collections.Collections.Transformations.chunked

```

@SinceKotlin("1.2")

```

public fun <T> Iterable<T>.chunked(size: Int): List<List<T>> {
    return windowed(size, size, partialWindows = true)
}

```

\* Splits this collection into several lists each not exceeding the given [size] and applies the given [transform] function to an each.

\* @return list of results of the [transform] applied to an each list.

\* Note that the list passed to the [transform] function is ephemeral and is valid only inside that function.

\* You should not store it or allow it to escape in some way, unless you made a snapshot of it.

\* The last list may have less elements than the given [size].

\* @param size the number of elements to take in each list, must be positive and can be greater than the number of elements in this collection.

@sample

```

samples.text.Strings.chunkedTransform

```

@SinceKotlin("1.2")

```

public fun <T, R> Iterable<T>.chunked(size: Int, transform: (List<T>) -> R): List<R> {
    return windowed(size, size, partialWindows = true, transform = transform)
}

```

\* Returns a list containing all elements of the original collection without the first occurrence of the given [element].

```

public operator fun <T> Iterable<T>.minus(element: T): List<T> {
    val result = ArrayList<T>(collectionSizeOrDefault(10))
    var removed = false
    return this.filterTo(result) { if (!removed && it == element) { removed = true; false } else true }
}

```

\* Returns a list containing all elements of the original collection except the elements contained in the given [elements] array.

\* The [elements] array may be converted to a [HashSet] to speed up the operation, thus the elements are required to have a correct and stable implementation of `hashCode()` that doesn't change between successive invocations.

```

public operator fun <T> Iterable<T>.minus(elements: Array<out T>): List<T> {
    if (elements.isEmpty()) return this.toList()
    val other = elements.toHashSet()
    return this.filterNot { it in other }
}

```

\* Returns a list containing all elements of the original collection except the elements contained in the given [elements] collection.

\* The [elements] collection may be converted to a [HashSet] to speed up the operation, thus the elements are required to have a correct and stable implementation of `hashCode()` that doesn't change between successive invocations.

```

public operator fun <T> Iterable<T>.minus(elements: Iterable<T>): List<T> {
    val other = elements.convertToSetForSetOperationWith(this)
    if (other.isEmpty()) return this.toList()
    return this.filterNot { it in other }
}

```

\* Returns a list containing all elements of the original collection except the elements contained in the given [elements] sequence.

\* The [elements] sequence may be converted to a [HashSet] to speed up the operation, thus the elements are required to have a correct and stable implementation of `hashCode()` that doesn't change between successive invocations.

```

public operator fun <T> Iterable<T>.minus(elements: Sequence<T>): List<T> {
    val other = elements.toHashSet()
    if (other.isEmpty()) return this.toList()
    return this.filterNot { it in other }
}

```

\* Returns a list containing all elements of the original collection without the first occurrence of the given [element].

```

@kotlin.internal.InlineOnly
public inline fun <T> Iterable<T>.minusElement(element: T): List<T> {
    return minus(element)
}

```

\* Splits the original collection into pair of lists, where \*first\* list contains elements for which [predicate] yielded `true`, while \*second\* list contains elements for which [predicate] yielded `false`.

```

public inline fun <T> Iterable<T>.partition(predicate: (T) -> Boolean): Pair<List<T>, List<T>> {
    val first = ArrayList<T>()
    val second = ArrayList<T>()
    for (element in this) {
        if (predicate(element)) {
            first.add(element)
        } else {
            second.add(element)
        }
    }
    return Pair(first, second)
}

```

\* Returns a list containing all elements of the original collection and then the given [element].

```

public operator fun <T> Iterable<T>.plus(element: T): List<T> {
    if (this is Collection) return this.plus(element)
    val result = ArrayList<T>()
    result.addAll(this)
    result.add(element)
    return result
}

```

\* Returns a list containing all elements of the original collection and then the given [element].

```

*public operator fun <T> Collection<T>.plus(element: T): List<T> {
    val result = ArrayList<T>(size + 1)
    result.addAll(this)
    result.add(element)
    return result
}
* Returns a list containing all elements of the original collection and then all elements of the given [elements] array.

*public operator fun <T> Iterable<T>.plus(elements: Array<out T>): List<T> {
    if (this is Collection) return this.plus(elements)
    val result = ArrayList<T>()
    result.addAll(this)
    result.addAll(elements)
    return result
}
* Returns a list containing all elements of the original collection and then all elements of the given [elements] array.

*public operator fun <T> Collection<T>.plus(elements: Array<out T>): List<T> {
    val result = ArrayList<T>(this.size + elements.size)
    result.addAll(this)
    result.addAll(elements)
    return result
}
* Returns a list containing all elements of the original collection and then all elements of the given [elements] collection.

*public operator fun <T> Iterable<T>.plus(elements: Iterable<T>): List<T> {
    if (this is Collection) return this.plus(elements)
    val result = ArrayList<T>()
    result.addAll(this)
    result.addAll(elements)
    return result
}
* Returns a list containing all elements of the original collection and then all elements of the given [elements] collection.

*public operator fun <T> Collection<T>.plus(elements: Iterable<T>): List<T> {
    if (elements is Collection) {
        val result = ArrayList<T>(this.size + elements.size)
        result.addAll(this)
        result.addAll(elements)
        return result
    } else {
        val result = ArrayList<T>(this)
        result.addAll(elements)
        return result
    }
}
* Returns a list containing all elements of the original collection and then all elements of the given [elements] sequence.

*public operator fun <T> Iterable<T>.plus(elements: Sequence<T>): List<T> {
    val result = ArrayList<T>()
    result.addAll(this)
    result.addAll(elements)
    return result
}
* Returns a list containing all elements of the original collection and then all elements of the given [elements] sequence.

Collection<T>.plus(elements: Sequence<T>): List<T> {
    val result = ArrayList<T>(this.size + 10)
    result.addAll(this)
    result.addAll(elements)
    return result
}
* Returns a list containing all elements of the original collection and then the given [element].

@kotlin.internal.InlineOnly
public inline fun <T> Iterable<T>.plusElement(element: T): List<T> {
    return plus(element)
}
* Returns a list containing all elements of the original collection and then the given [element].

@kotlin.internal.InlineOnly
public inline fun <T> Collection<T>.plusElement(element: T): List<T> {
    return plus(element)
}
* Returns a list of snapshots of the window of the given [size] sliding along this collection with the given [step], where each snapshot is a list.
* Several last lists may have less elements than the given [size].
* Both [size] and [step] must be positive and can be greater than the number of elements in this collection.
* @param size the number of elements to take in each window
* @param step the number of elements to move the window forward by on an each step, by default 1
* @param partialWindows controls whether or not to keep partial windows in the end if any, by default `false` which means partial windows won't be preserved
* @sample samples.collections.Sequences.Transformations.takeWindows
* @SinceKotlin("1.2")
public fun <T> Iterable<T>.windowed(size: Int, step: Int = 1, partialWindows: Boolean = false): List<List<T>> {
    checkWindowSizeStep(size, step)
    if (this is RandomAccess && this is List) {
        val thisSize = this.size
        val resultCapacity = thisSize / step + if (thisSize % step == 0) 0 else 1
        val result = ArrayList<List<T>>(resultCapacity)
        var index = 0
        while (index in 0 until thisSize) {
            val windowSize = size.coerceAtMost(thisSize - index)
            if (windowSize < size && !partialWindows) break
            result.add(List(windowSize) { this[it + index] })
            index += step
        }
        return result
    }
    val result = ArrayList<List<T>>()
    windowedIterator(iterator(), size, step, partialWindows, reuseBuffer = false).forEach {
        result.add(it)
    }
    return result
}
* Returns a list of results of applying the given [transform] function to an each list representing a view over the window of the given [size] sliding along this collection with the given [step].
* Note that the list passed to the [transform] function is ephemeral and is valid only inside that function.
* You should not store it or allow it to escape in some way, unless you made a snapshot of it.
* Several last lists may have less elements than the given [size].
* Both [size] and [step] must be positive and can be greater than the number of elements in this collection.
* @param size the number of elements to take in each window
* @param step the number of elements to move the window forward by on an each step, by default 1
* @param partialWindows controls whether or not to keep partial windows in the end if

```

```

any, \n * by default `false` which means partial windows won't be preserved \n * \n * @sample
samples.collections.Sequences.Transformations.averageWindows \n * \n @SinceKotlin("1.2") \n public fun <T, R>
Iterable<T>.windowed(size: Int, step: Int = 1, partialWindows: Boolean = false, transform: (List<T>) -> R):
List<R> { \n    checkWindowSizeStep(size, step) \n    if (this is RandomAccess && this is List) { \n        val thisSize =
this.size \n        val resultCapacity = thisSize / step + if (thisSize % step == 0) 0 else 1 \n        val result =
ArrayList<R>(resultCapacity) \n        val window = MovingSubList(this) \n        var index = 0 \n        while (index in 0
until thisSize) { \n            val windowSize = size.coerceAtMost(thisSize - index) \n            if (!partialWindows &&
windowSize < size) break \n            window.move(index, index + windowSize) \n
result.add(transform(window)) \n            index += step \n        } \n        return result \n    } \n    val result =
ArrayList<R>() \n    windowedIterator(iterator(), size, step, partialWindows, reuseBuffer = true).forEach { \n
result.add(transform(it)) \n    } \n    return result \n } \n \n /** \n * Returns a list of pairs built from the elements of `this`
collection and the [other] array with the same index. \n * The returned list has length of the shortest collection. \n * \n
* @sample samples.collections.Iterables.Operations.zipIterable \n * \n public infix fun <T, R> Iterable<T>.zip(other:
Array<out R>): List<Pair<T, R>> { \n    return zip(other) { t1, t2 -> t1 to t2 } \n } \n \n /** \n * Returns a list of values
built from the elements of `this` collection and the [other] array with the same index \n * using the provided
[transform] function applied to each pair of elements. \n * The returned list has length of the shortest collection. \n *
\n * @sample samples.collections.Iterables.Operations.zipIterableWithTransform \n * \n public inline fun <T, R, V>
Iterable<T>.zip(other: Array<out R>, transform: (a: T, b: R) -> V): List<V> { \n    val arraySize = other.size \n    val
list = ArrayList<V>(minOf(collectionSizeOrDefault(10), arraySize)) \n    var i = 0 \n    for (element in this) { \n        if
(i >= arraySize) break \n        list.add(transform(element, other[i++])) \n    } \n    return list \n } \n \n /** \n * Returns a list
of pairs built from the elements of `this` collection and [other] collection with the same index. \n * The returned list
has length of the shortest collection. \n * \n * @sample samples.collections.Iterables.Operations.zipIterable \n
\n public infix fun <T, R> Iterable<T>.zip(other: Iterable<R>): List<Pair<T, R>> { \n    return zip(other) { t1, t2 ->
t1 to t2 } \n } \n \n /** \n * Returns a list of values built from the elements of `this` collection and the [other] collection
with the same index \n * using the provided [transform] function applied to each pair of elements. \n * The returned
list has length of the shortest collection. \n * \n * @sample
samples.collections.Iterables.Operations.zipIterableWithTransform \n * \n public inline fun <T, R, V>
Iterable<T>.zip(other: Iterable<R>, transform: (a: T, b: R) -> V): List<V> { \n    val first = iterator() \n    val second
= other.iterator() \n    val list = ArrayList<V>(minOf(collectionSizeOrDefault(10),
other.collectionSizeOrDefault(10))) \n    while (first.hasNext() && second.hasNext()) { \n
list.add(transform(first.next(), second.next())) \n    } \n    return list \n } \n \n /** \n * Returns a list of pairs of each two
adjacent elements in this collection. \n * \n * The returned list is empty if this collection contains less than two
elements. \n * \n * @sample samples.collections.Collections.Transformations.zipWithNext \n
\n @SinceKotlin("1.2") \n public fun <T> Iterable<T>.zipWithNext(): List<Pair<T, T>> { \n    return zipWithNext
{ a, b -> a to b } \n } \n \n /** \n * Returns a list containing the results of applying the given [transform] function \n * to
an each pair of two adjacent elements in this collection. \n * \n * The returned list is empty if this collection contains
less than two elements. \n * \n * @sample
samples.collections.Collections.Transformations.zipWithNextToFindDeltas \n * \n @SinceKotlin("1.2") \n public
inline fun <T, R> Iterable<T>.zipWithNext(transform: (a: T, b: T) -> R): List<R> { \n    val iterator = iterator() \n    if
(!iterator.hasNext()) return emptyList() \n    val result = mutableListOf<R>() \n    var current = iterator.next() \n
while (iterator.hasNext()) { \n        val next = iterator.next() \n        result.add(transform(current, next)) \n        current
= next \n    } \n    return result \n } \n \n /** \n * Appends the string from all the elements separated using [separator] and
using the given [prefix] and [postfix] if supplied. \n * \n * If the collection could be huge, you can specify a non-
negative value of [limit], in which case only the first [limit] \n * elements will be appended, followed by the
[truncated] string (which defaults to "..."). \n * \n * @sample
samples.collections.Collections.Transformations.joinTo \n * \n public fun <T, A : Appendable>
Iterable<T>.joinTo(buffer: A, separator: CharSequence = '\n', prefix: CharSequence = "\n", postfix: CharSequence
= "\n", limit: Int = -1, truncated: CharSequence = "...", transform: ((T) -> CharSequence)? = null): A { \n

```

```

buffer.append(prefix)\n    var count = 0\n    for (element in this) {\n        if (++count > 1) buffer.append(separator)\n        if (limit < 0 || count <= limit) {\n            buffer.appendElement(element, transform)\n        } else break\n    }\n    if (limit >= 0 && count > limit) buffer.append(truncated)\n    buffer.append(postfix)\n    return buffer\n}\n\n/**\n * Creates a string from all the elements separated using [separator] and using the given [prefix] and [postfix] if supplied.\n * If the collection could be huge, you can specify a non-negative value of [limit], in which case only the first [limit] elements will be appended, followed by the [truncated] string (which defaults to "...").\n */\n @sample samples.collections.Collections.Transformations.joinToString\n */\npublic fun <T> Iterable<T>.joinToString(separator: CharSequence = "|", prefix: CharSequence = "", postfix: CharSequence = "", limit: Int = -1, truncated: CharSequence = "...", transform: ((T) -> CharSequence)? = null): String {\n    return joinTo(StringBuilder(), separator, prefix, postfix, limit, truncated, transform).toString()\n}\n\n/**\n * Returns this collection as an [Iterable].\n */\n @kotlin.internal.InlineOnly\npublic inline fun <T> Iterable<T>.asIterable(): Iterable<T> {\n    return this\n}\n\n/**\n * Creates a [Sequence] instance that wraps the original collection returning its elements when being iterated.\n */\n @sample samples.collections.Sequences.Building.sequenceFromCollection\n */\npublic fun <T> Iterable<T>.asSequence(): Sequence<T> {\n    return Sequence { this.iterator() }\n}\n\n/**\n * Returns an average value of elements in the collection.\n */\n @kotlin.jvm.JvmName("averageOfByte")\npublic fun Iterable<Byte>.average(): Double {\n    var sum: Double = 0.0\n    var count: Int = 0\n    for (element in this) {\n        sum += element\n        checkCountOverflow(++count)\n    }\n    return if (count == 0) Double.NaN else sum / count\n}\n\n/**\n * Returns an average value of elements in the collection.\n */\n @kotlin.jvm.JvmName("averageOfShort")\npublic fun Iterable<Short>.average(): Double {\n    var sum: Double = 0.0\n    var count: Int = 0\n    for (element in this) {\n        sum += element\n        checkCountOverflow(++count)\n    }\n    return if (count == 0) Double.NaN else sum / count\n}\n\n/**\n * Returns an average value of elements in the collection.\n */\n @kotlin.jvm.JvmName("averageOfInt")\npublic fun Iterable<Int>.average(): Double {\n    var sum: Double = 0.0\n    var count: Int = 0\n    for (element in this) {\n        sum += element\n        checkCountOverflow(++count)\n    }\n    return if (count == 0) Double.NaN else sum / count\n}\n\n/**\n * Returns an average value of elements in the collection.\n */\n @kotlin.jvm.JvmName("averageOfLong")\npublic fun Iterable<Long>.average(): Double {\n    var sum: Double = 0.0\n    var count: Int = 0\n    for (element in this) {\n        sum += element\n        checkCountOverflow(++count)\n    }\n    return if (count == 0) Double.NaN else sum / count\n}\n\n/**\n * Returns an average value of elements in the collection.\n */\n @kotlin.jvm.JvmName("averageOfFloat")\npublic fun Iterable<Float>.average(): Double {\n    var sum: Double = 0.0\n    var count: Int = 0\n    for (element in this) {\n        sum += element\n        checkCountOverflow(++count)\n    }\n    return if (count == 0) Double.NaN else sum / count\n}\n\n/**\n * Returns an average value of elements in the collection.\n */\n @kotlin.jvm.JvmName("averageOfDouble")\npublic fun Iterable<Double>.average(): Double {\n    var sum: Double = 0.0\n    var count: Int = 0\n    for (element in this) {\n        sum += element\n        checkCountOverflow(++count)\n    }\n    return if (count == 0) Double.NaN else sum / count\n}\n\n/**\n * Returns the sum of all elements in the collection.\n */\n @kotlin.jvm.JvmName("sumOfByte")\npublic fun Iterable<Byte>.sum(): Int {\n    var sum: Int = 0\n    for (element in this) {\n        sum += element\n    }\n    return sum\n}\n\n/**\n * Returns the sum of all elements in the collection.\n */\n @kotlin.jvm.JvmName("sumOfShort")\npublic fun Iterable<Short>.sum(): Int {\n    var sum: Int = 0\n    for (element in this) {\n        sum += element\n    }\n    return sum\n}\n\n/**\n * Returns the sum of all elements in the collection.\n */\n @kotlin.jvm.JvmName("sumOfInt")\npublic fun Iterable<Int>.sum(): Int {\n    var sum: Int = 0\n    for (element in this) {\n        sum += element\n    }\n    return sum\n}\n\n/**\n * Returns the sum of all elements in the collection.\n */\n @kotlin.jvm.JvmName("sumOfLong")\npublic fun Iterable<Long>.sum(): Long {\n    var sum: Long = 0L\n    for (element in this) {\n        sum += element\n    }\n    return sum\n}\n\n/**\n * Returns the sum of all elements in the collection.\n */\n @kotlin.jvm.JvmName("sumOfFloat")\npublic fun Iterable<Float>.sum(): Float {\n    var sum: Float = 0.0f\n    for (element in this) {\n        sum += element\n    }\n    return sum\n}\n\n/**\n * Returns the sum of all elements in the collection.\n */\n @kotlin.jvm.JvmName("sumOfDouble")\npublic fun Iterable<Double>.sum(): Double {\n    var sum: Double

```



```

= 0.0\n for (element in this) {\n    sum += element\n } \n return sum\n}\n\n"/*\n * Copyright 2010-2018
JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the
Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.collections\n\nimport
kotlin.comparisons.naturalOrder\nimport kotlin.random.Random\n\n/** Returns the array if it's not `null`, or an
empty array otherwise. */\n@kotlin.internal.InlineOnly\npublic actual inline fun <T> Array<out T>?.orEmpty():
Array<out T> = this ?: emptyArray<T>()\n\n@kotlin.internal.InlineOnly\npublic actual inline fun <T>
Collection<T>.toArray(): Array<T> =
copyToArray(this)\n\n@JsName("copyToArray")\n@PublishedApi\ninternal fun <T> copyToArray(collection:
Collection<T>): Array<T> {\n    return if (collection.asDynamic().toArray !== undefined)\n
collection.asDynamic().toArray().unsafeCast<Array<T>>()\n    else\n
copyToArrayImpl(collection).unsafeCast<Array<T>>()\n}\n\n@JsName("copyToArrayImpl")\ninternal actual fun
copyToArrayImpl(collection: Collection<*>): Array<Any?> {\n    val array = emptyArray<Any?>()\n    val iterator
= collection.iterator()\n    while (iterator.hasNext())\n        array.asDynamic().push(iterator.next())\n    return
array\n}\n\n@JsName("copyToExistingArrayImpl")\ninternal actual fun <T> copyToArrayImpl(collection:
Collection<*>, array: Array<T>): Array<T> {\n    if (array.size < collection.size)\n        return
copyToArrayImpl(collection).unsafeCast<Array<T>>()\n    val iterator = collection.iterator()\n    var index = 0\n
while (iterator.hasNext()) {\n        array[index++] = iterator.next().unsafeCast<T>()\n    }\n    if (index < array.size)
{\n        array[index] = null.unsafeCast<T>()\n    }\n    return array\n}\n\n/**\n * Returns an immutable list
containing only the specified object [element].\n */\npublic fun <T> listOf(element: T): List<T> =
arrayListOf(element)\n\n/**\n * Returns an immutable set containing only the specified object [element].\n */
*\npublic fun <T> setOf(element: T): Set<T> = hashSetOf(element)\n\n/**\n * Returns an immutable map,
mapping only the specified key to the\n * specified value.\n */\npublic fun <K, V> mapOf(pair: Pair<K, V>):
Map<K, V> = hashMapOf(pair)\n\n/**\n * Fills the list with the provided [value].\n * Each element in the list
gets replaced with the [value].\n */\n@SinceKotlin("1.2")\npublic actual fun <T> MutableList<T>.fill(value: T):
Unit {\n    for (index in 0..lastIndex) {\n        this[index] = value\n    }\n}\n\n/**\n * Randomly shuffles
elements in this list.\n * See: https://en.wikipedia.org/wiki/Fisher%20%80%93Yates\_shuffle#The\_modern\_algorithm\n */
*\n@SinceKotlin("1.2")\npublic actual fun <T> MutableList<T>.shuffle(): Unit = shuffle(Random)\n\n/**\n * Returns a new list with the elements of this list randomly shuffled.\n */\n@SinceKotlin("1.2")\npublic actual fun
<T> Iterable<T>.shuffled(): List<T> = toMutableList().apply { shuffle() }\n\n/**\n * Sorts elements in the list in-
place according to their natural sort order.\n * The sort is _stable_. It means that equal elements preserve their
order relative to each other after sorting.\n */\npublic actual fun <T : Comparable<T>> MutableList<T>.sort(): Unit
{\n    collectionsSort(this, naturalOrder())\n}\n\n/**\n * Sorts elements in the list in-place according to the order
specified with [comparator].\n * The sort is _stable_. It means that equal elements preserve their order relative to
each other after sorting.\n */\npublic actual fun <T> MutableList<T>.sortWith(comparator: Comparator<in T>):
Unit {\n    collectionsSort(this, comparator)\n}\n\nprivate fun <T> collectionsSort(list: MutableList<T>,
comparator: Comparator<in T>) {\n    if (list.size <= 1) return\n    val array = copyToArray(list)\n
sortArrayWith(array, comparator)\n    for (i in 0 until array.size) {\n        list[i] = array[i]\n    }\n}\n\ninternal
actual fun <T> arrayOfNulls(reference: Array<T>, size: Int): Array<T> {\n    return
arrayOfNulls<Any>(size).unsafeCast<Array<T>>()\n}\n\n@SinceKotlin("1.3")\n@PublishedApi\n@JsName("arrayCopy")\ninternal fun <T> arrayCopy(source: Array<out T>, destination: Array<in T>, destinationOffset: Int,
startIndex: Int, endIndex: Int) {\n    AbstractList.checkRangeIndexes(startIndex, endIndex, source.size)\n    val
rangeSize = endIndex - startIndex\n    AbstractList.checkRangeIndexes(destinationOffset, destinationOffset +
rangeSize, destination.size)\n    if (js("ArrayBuffer").isView(destination) &&
js("ArrayBuffer").isView(source)) {\n        val subrange = source.asDynamic().subarray(startIndex, endIndex)\n
destination.asDynamic().set(subrange, destinationOffset)\n    } else {\n        if (source !== destination ||
destinationOffset <= startIndex) {\n            for (index in 0 until rangeSize) {\n
destination[destinationOffset + index] = source[startIndex + index]\n            }\n        } else {\n            for (index in
rangeSize - 1 downTo 0) {\n                destination[destinationOffset + index] = source[startIndex + index]\n
}

```

```

}
}
}
// no singleton map implementation in js, return map as
is@Suppress("NOTHING_TO_INLINE")\ninternal actual inline fun <K, V> Map<K,
V>.toSingletonMapOrSelf(): Map<K, V> = this\n\n@Suppress("NOTHING_TO_INLINE")\ninternal actual inline
fun <K, V> Map<out K, V>.toSingletonMap(): Map<K, V> =
this.toMutableMap()\n\n@Suppress("NOTHING_TO_INLINE")\ninternal actual inline fun <T> Array<out
T>.copyToArrayOfAny(isVarargs: Boolean): Array<out Any?> =\n if (isVarargs)\n // no need to copy vararg
array in JS\n this\n else\n this.copyOf()\n\n@PublishedApi\ninternal actual fun
checkIndexOverflow(index: Int): Int {\n if (index < 0) {\n throwIndexOverflow()\n }\n return
index\n}\n\n@PublishedApi\ninternal actual fun checkCountOverflow(count: Int): Int {\n if (count < 0) {\n
throwCountOverflow()\n }\n return count\n}\n\n/**\n * JS map and set implementations do not make use of
capacities or load factors.\n *\n@PublishedApi\ninternal actual fun mapCapacity(expectedSize: Int) =
expectedSize\n\n/**\n * Checks a collection builder function capacity argument.\n * In JS no validation is made in
Map/Set constructor yet.\n *\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@PublishedApi\ninternal actual
fun checkBuilderCapacity(capacity: Int) {\n require(capacity >= 0) { \"capacity must be non-negative.\"
}\n}\n\"/>\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this
source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName(\"CollectionsKt\")\n\npackage
kotlin.collections\n\n/**\n * Returns the given iterator itself. This allows to use an instance of iterator in a `for`
loop.\n * @sample samples.collections.Iterators.iterator\n *\n@kotlin.internal.InlineOnly\npublic inline operator
fun <T> Iterator<T>.iterator(): Iterator<T> = this\n\n/**\n * Returns an [Iterator] that wraps each element produced
by the original iterator\n * into an [IndexedValue] containing the index of that element and the element itself.\n *\n
* @sample samples.collections.Iterators.withIndexIterator\n *\npublic fun <T> Iterator<T>.withIndex():
Iterator<IndexedValue<T>> = IndexingIterator(this)\n\n/**\n * Performs the given [operation] on each element of
this [Iterator].\n * @sample samples.collections.Iterators.forEachIterator\n *\npublic inline fun <T>
Iterator<T>.forEach(operation: (T) -> Unit): Unit {\n for (element in this) operation(element)\n}\n\n/**\n *
Iterator transforming original `iterator` into iterator of [IndexedValue], counting index from zero.\n *\n\ninternal class
IndexingIterator<out T>(private val iterator: Iterator<T>) : Iterator<IndexedValue<T>> {\n private var index =
0\n final override fun hasNext(): Boolean = iterator.hasNext()\n final override fun next(): IndexedValue<T> =
IndexedValue(checkIndexOverflow(index++), iterator.next())\n}\n\"/>\n * Copyright 2010-2019 JetBrains s.r.o.
and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license
that can be found in the license/LICENSE.txt file.\n
*\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName(\"ComparisonsKt\")\n\npackage
kotlin.comparisons\n\n/\n// NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt\n// See:
https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib\n\nimport kotlin.random.*\n\n/**\n * Returns the
greater of two values.\n * If values are equal, returns the first one.\n *\n@SinceKotlin("1.1")\npublic expect fun
<T : Comparable<T>> maxOf(a: T, b: T): T\n\n/**\n * Returns the greater of two values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun maxOf(a: Byte, b: Byte):
Byte\n\n/**\n * Returns the greater of two values.\n *\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic
expect inline fun maxOf(a: Short, b: Short): Short\n\n/**\n * Returns the greater of two values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun maxOf(a: Int, b: Int): Int\n\n
*\n * Returns the greater of two values.\n *\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline
fun maxOf(a: Long, b: Long): Long\n\n/**\n * Returns the greater of two values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun maxOf(a: Float, b: Float):
Float\n\n/**\n * Returns the greater of two values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun maxOf(a: Double, b: Double):
Double\n\n/**\n * Returns the greater of three values.\n *\n@SinceKotlin("1.1")\npublic expect fun <T :
Comparable<T>> maxOf(a: T, b: T, c: T): T\n\n/**\n * Returns the greater of three values.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun maxOf(a: Byte, b: Byte, c: Byte):

```

Byte\n\n/\*\*\n \* Returns the greater of three values.\n

\*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun maxOf(a: Short, b: Short, c: Short): Short\n\n/\*\*\n \* Returns the greater of three values.\n

\*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun maxOf(a: Int, b: Int, c: Int): Int\n\n/\*\*\n \* Returns the greater of three values.\n \*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun maxOf(a: Long, b: Long, c: Long): Long\n\n/\*\*\n \* Returns the greater of three values.\n

\*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun maxOf(a: Float, b: Float, c: Float): Float\n\n/\*\*\n \* Returns the greater of three values.\n

\*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun maxOf(a: Double, b: Double, c: Double): Double\n\n/\*\*\n \* Returns the greater of three values according to the order specified by the given [comparator].\n \*\n@SinceKotlin("1.1")\npublic fun <T> maxOf(a: T, b: T, c: T, comparator: Comparator<in T>): T {\n return maxOf(a, maxOf(b, c, comparator), comparator)\n}\n\n/\*\*\n \* Returns the greater of two values according to the order specified by the given [comparator].\n \* If values are equal, returns the first one.\n

\*\n@SinceKotlin("1.1")\npublic fun <T> maxOf(a: T, b: T, comparator: Comparator<in T>): T {\n return if (comparator.compare(a, b) >= 0) a else b\n}\n\n/\*\*\n \* Returns the smaller of two values.\n \* If values are equal, returns the first one.\n

\*\n@SinceKotlin("1.1")\npublic expect fun <T : Comparable<T>> minOf(a: T, b: T): T\n\n/\*\*\n \* Returns the smaller of two values.\n \*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun minOf(a: Byte, b: Byte): Byte\n\n/\*\*\n \* Returns the smaller of two values.\n

\*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun minOf(a: Short, b: Short): Short\n\n/\*\*\n \* Returns the smaller of two values.\n

\*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun minOf(a: Int, b: Int): Int\n\n/\*\*\n \* Returns the smaller of two values.\n \*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun minOf(a: Long, b: Long): Long\n\n/\*\*\n \* Returns the smaller of two values.\n

\*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun minOf(a: Float, b: Float): Float\n\n/\*\*\n \* Returns the smaller of two values.\n

\*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun minOf(a: Double, b: Double): Double\n\n/\*\*\n \* Returns the smaller of three values.\n \*\n@SinceKotlin("1.1")\npublic expect fun <T : Comparable<T>> minOf(a: T, b: T, c: T): T\n\n/\*\*\n \* Returns the smaller of three values.\n

\*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun minOf(a: Byte, b: Byte, c: Byte): Byte\n\n/\*\*\n \* Returns the smaller of three values.\n

\*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun minOf(a: Short, b: Short, c: Short): Short\n\n/\*\*\n \* Returns the smaller of three values.\n

\*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun minOf(a: Int, b: Int, c: Int): Int\n\n/\*\*\n \* Returns the smaller of three values.\n \*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun minOf(a: Long, b: Long, c: Long): Long\n\n/\*\*\n \* Returns the smaller of three values.\n

\*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun minOf(a: Float, b: Float, c: Float): Float\n\n/\*\*\n \* Returns the smaller of three values.\n

\*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic expect inline fun minOf(a: Double, b: Double, c: Double): Double\n\n/\*\*\n \* Returns the smaller of three values according to the order specified by the given [comparator].\n \*\n@SinceKotlin("1.1")\npublic fun <T> minOf(a: T, b: T, c: T, comparator: Comparator<in T>): T {\n return minOf(a, minOf(b, c, comparator), comparator)\n}\n\n/\*\*\n \* Returns the smaller of two values according to the order specified by the given [comparator].\n \* If values are equal, returns the first one.\n

\*\n@SinceKotlin("1.1")\npublic fun <T> minOf(a: T, b: T, comparator: Comparator<in T>): T {\n return if (comparator.compare(a, b) <= 0) a else b\n}\n\n"/\n \* Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.\n \* Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n

\*\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("MapsKt")\n\npackage kotlin.collections\n\n/\n// NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt\n// See:

```

https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib\n\nimport kotlin.random.*\nimport
kotlin.ranges.contains\nimport kotlin.ranges.reversed\n\n/**\n * Returns a [List] containing all key-value pairs.\n
*\npublic fun <K, V> Map<out K, V>.toList(): List<Pair<K, V>> {\n    if (size == 0)\n        return emptyList()\n    val iterator = entries.iterator()\n    if (!iterator.hasNext())\n        return emptyList()\n    val first = iterator.next()\n    if
(!iterator.hasNext())\n        return listOf(first.toPair())\n    val result = ArrayList<Pair<K, V>>(size)\n    result.add(first.toPair())\n    do {\n        result.add(iterator.next().toPair())\n    } while (iterator.hasNext())\n    return
result\n}\n\n/**\n * Returns a single list of all elements yielded from results of [transform] function being invoked
on each entry of original map.\n * \n * @sample samples.collections.Collections.Transformations.flatMap\n
*\npublic inline fun <K, V, R> Map<out K, V>.flatMap(transform: (Map.Entry<K, V>) -> Iterable<R>): List<R>
{\n    return flatMapTo(ArrayList<R>(), transform)\n}\n\n/**\n * Appends all elements yielded from results of
[transform] function being invoked on each entry of original map, to the given [destination].\n *\npublic inline fun
<K, V, R, C : MutableCollection<in R>> Map<out K, V>.flatMapTo(destination: C, transform: (Map.Entry<K, V>)
-> Iterable<R>): C {\n    for (element in this) {\n        val list = transform(element)\n        destination.addAll(list)\n
    }\n    return destination\n}\n\n/**\n * Returns a list containing the results of applying the given [transform]
function\n * to each entry in the original map.\n * \n * @sample
samples.collections.Maps.Transformations.mapToList\n *\npublic inline fun <K, V, R> Map<out K,
V>.map(transform: (Map.Entry<K, V>) -> R): List<R> {\n    return mapTo(ArrayList<R>(size),
transform)\n}\n\n/**\n * Returns a list containing only the non-null results of applying the given [transform]
function\n * to each entry in the original map.\n *\npublic inline fun <K, V, R : Any> Map<out K,
V>.mapNotNull(transform: (Map.Entry<K, V>) -> R?): List<R> {\n    return mapNotNullTo(ArrayList<R>(),
transform)\n}\n\n/**\n * Applies the given [transform] function to each entry in the original map\n * and appends
only the non-null results to the given [destination].\n *\npublic inline fun <K, V, R : Any, C : MutableCollection<in
R>> Map<out K, V>.mapNotNullTo(destination: C, transform: (Map.Entry<K, V>) -> R?): C {\n    forEach {
element -> transform(element)?.let { destination.add(it) } }\n    return destination\n}\n\n/**\n * Applies the given
[transform] function to each entry of the original map\n * and appends the results to the given [destination].\n
*\npublic inline fun <K, V, R, C : MutableCollection<in R>> Map<out K, V>.mapTo(destination: C, transform:
(Map.Entry<K, V>) -> R): C {\n    for (item in this)\n        destination.add(transform(item))\n    return
destination\n}\n\n/**\n * Returns `true` if all entries match the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.all\n *\npublic inline fun <K, V> Map<out K, V>.all(predicate:
(Map.Entry<K, V>) -> Boolean): Boolean {\n    if (isEmpty()) return true\n    for (element in this) if
(!predicate(element)) return false\n    return true\n}\n\n/**\n * Returns `true` if map has at least one entry.\n * \n *
@sample samples.collections.Collections.Aggregates.any\n *\npublic fun <K, V> Map<out K, V>.any(): Boolean
{\n    return !isEmpty()\n}\n\n/**\n * Returns `true` if at least one entry matches the given [predicate].\n * \n *
@sample samples.collections.Collections.Aggregates.anyWithPredicate\n *\npublic inline fun <K, V> Map<out K,
V>.any(predicate: (Map.Entry<K, V>) -> Boolean): Boolean {\n    if (isEmpty()) return false\n    for (element in
this) if (predicate(element)) return true\n    return false\n}\n\n/**\n * Returns the number of entries in this map.\n
*\n@kotlin.internal.InlineOnly\npublic inline fun <K, V> Map<out K, V>.count(): Int {\n    return size\n}\n\n/**\n
 * Returns the number of entries matching the given [predicate].\n *\npublic inline fun <K, V> Map<out K,
V>.count(predicate: (Map.Entry<K, V>) -> Boolean): Int {\n    if (isEmpty()) return 0\n    var count = 0\n    for
(element in this) if (predicate(element)) ++count\n    return count\n}\n\n/**\n * Performs the given [action] on each
entry.\n *\n@kotlin.internal.HidesMembers\npublic inline fun <K, V> Map<out K, V>.forEach(action:
(Map.Entry<K, V>) -> Unit): Unit {\n    for (element in this) action(element)\n}\n\n/**\n * Returns the first entry
yielding the largest value of the given function or `null` if there are no entries.\n * \n * @sample
samples.collections.Collections.Aggregates.maxBy\n *\n@kotlin.internal.InlineOnly\npublic inline fun <K, V, R :
Comparable<R>> Map<out K, V>.maxBy(selector: (Map.Entry<K, V>) -> R): Map.Entry<K, V>? {\n    return
entries.maxBy(selector)\n}\n\n/**\n * Returns the first entry having the largest value according to the provided
[comparator] or `null` if there are no entries.\n *\n@kotlin.internal.InlineOnly\npublic inline fun <K, V> Map<out
K, V>.maxWith(comparator: Comparator<in Map.Entry<K, V>>): Map.Entry<K, V>? {\n    return

```

```

entries.maxWith(comparator)\n}\n\n/**\n * Returns the first entry yielding the smallest value of the given function
or `null` if there are no entries.\n * \n * @sample samples.collections.Collections.Aggregates.minBy\n */\npublic
inline fun <K, V, R : Comparable<R>> Map<out K, V>.minBy(selector: (Map.Entry<K, V>) -> R): Map.Entry<K,
V>? {\n    return entries.minBy(selector)\n}\n\n/**\n * Returns the first entry having the smallest value according to
the provided [comparator] or `null` if there are no entries.\n */\npublic fun <K, V> Map<out K,
V>.minWith(comparator: Comparator<in Map.Entry<K, V>>): Map.Entry<K, V>? {\n    return
entries.minWith(comparator)\n}\n\n/**\n * Returns `true` if the map has no entries.\n * \n * @sample
samples.collections.Collections.Aggregates.none\n */\npublic fun <K, V> Map<out K, V>.none(): Boolean {\n
return isEmpty()\n}\n\n/**\n * Returns `true` if no entries match the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.noneWithPredicate\n */\npublic inline fun <K, V> Map<out K,
V>.none(predicate: (Map.Entry<K, V>) -> Boolean): Boolean {\n    if (isEmpty()) return true\n    for (element in
this) if (predicate(element)) return false\n    return true\n}\n\n/**\n * Performs the given [action] on each entry and
returns the map itself afterwards.\n */\n@SinceKotlin("1.1")\npublic inline fun <K, V, M : Map<out K, V>>
M.onEach(action: (Map.Entry<K, V>) -> Unit): M {\n    return apply { for (element in this) action(element)
}\n}\n\n/**\n * Creates an [Iterable] instance that wraps the original map returning its entries when being iterated.\n
*/\n@kotlin.internal.InlineOnly\npublic inline fun <K, V> Map<out K, V>.asIterable(): Iterable<Map.Entry<K,
V>> {\n    return entries\n}\n\n/**\n * Creates a [Sequence] instance that wraps the original map returning its entries
when being iterated.\n */\npublic fun <K, V> Map<out K, V>.asSequence(): Sequence<Map.Entry<K, V>> {\n
return entries.asSequence()\n}\n\n"/*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n
*/\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("SequencesKt")\n\npackage
kotlin.sequences\n\n// NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt\n// See:
https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib\n\nimport kotlin.random.*\n\n/**\n * Returns
`true` if [element] is found in the sequence.\n * \n * The operation is _terminal_.\n */\npublic operator fun
<@kotlin.internal.OnlyInputTypes T> Sequence<T>.contains(element: T): Boolean {\n    return indexOf(element)
>= 0\n}\n\n/**\n * Returns an element at the given [index] or throws an [IndexOutOfBoundsException] if the
[index] is out of bounds of this sequence.\n * \n * The operation is _terminal_.\n * \n * @sample
samples.collections.Collections.Elements.elementAt\n */\npublic fun <T> Sequence<T>.elementAt(index: Int): T
{\n    return elementAtOrElse(index) { throw IndexOutOfBoundsException("Sequence doesn't contain element at
index $index.") }\n}\n\n/**\n * Returns an element at the given [index] or the result of calling the [defaultValue]
function if the [index] is out of bounds of this sequence.\n * \n * The operation is _terminal_.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrElse\n */\npublic fun <T>
Sequence<T>.elementAtOrElse(index: Int, defaultValue: (Int) -> T): T {\n    if (index < 0)\n        return
defaultValue(index)\n    val iterator = iterator()\n    var count = 0\n    while (iterator.hasNext()) {\n        val element
= iterator.next()\n        if (index == count++)\n            return element\n    }\n    return
defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or `null` if the [index] is out of bounds of
this sequence.\n * \n * The operation is _terminal_.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrNull\n */\npublic fun <T>
Sequence<T>.elementAtOrNull(index: Int): T? {\n    if (index < 0)\n        return null\n    val iterator = iterator()\n
var count = 0\n    while (iterator.hasNext()) {\n        val element = iterator.next()\n        if (index == count++)\n
return element\n    }\n    return null\n}\n\n/**\n * Returns the first element matching the given [predicate], or `null`
if no such element was found.\n * \n * The operation is _terminal_.\n */\n@kotlin.internal.InlineOnly\npublic inline
fun <T> Sequence<T>.find(predicate: (T) -> Boolean): T? {\n    return firstOrNull(predicate)\n}\n\n/**\n * Returns
the last element matching the given [predicate], or `null` if no such element was found.\n * \n * The operation is
_terminal_.\n */\n@kotlin.internal.InlineOnly\npublic inline fun <T> Sequence<T>.findLast(predicate: (T) ->
Boolean): T? {\n    return lastOrNull(predicate)\n}\n\n/**\n * Returns first element.\n * \n * @throws
[NoSuchElementException] if the sequence is empty.\n * \n * The operation is _terminal_.\n */\npublic fun <T>

```

```

Sequence<T>.first(): T {
    val iterator = iterator()
    if (!iterator.hasNext())
        throw NoSuchElementException("Sequence is empty.")
    return iterator.next()
}

Returns the first element matching the given [predicate].
@throws [NoSuchElementException] if no such element is found.

The operation is _terminal_.

public inline fun <T> Sequence<T>.first(predicate: (T) -> Boolean): T {
    for (element in this)
        if (predicate(element))
            return element
    throw NoSuchElementException("Sequence contains no element matching the predicate.")
}

Returns the first element, or `null` if the sequence is empty.

The operation is _terminal_.

public fun <T> Sequence<T>.firstOrNull(): T? {
    val iterator = iterator()
    if (!iterator.hasNext())
        return null
    return iterator.next()
}

Returns the first element matching the given [predicate], or `null` if element was not found.

The operation is _terminal_.

public inline fun <T> Sequence<T>.firstOrNull(predicate: (T) -> Boolean): T? {
    for (element in this)
        if (predicate(element))
            return element
    return null
}

Returns first index of [element], or -1 if the sequence does not contain element.

The operation is _terminal_.

public fun <@kotlin.internal.OnlyInputTypes T> Sequence<T>.indexOf(element: T): Int {
    var index = 0
    for (item in this) {
        checkIndexOverflow(index)
        if (element == item)
            return index
        index++
    }
    return -1
}

Returns index of the first element matching the given [predicate], or -1 if the sequence does not contain such element.

The operation is _terminal_.

public inline fun <T> Sequence<T>.indexOfFirst(predicate: (T) -> Boolean): Int {
    var index = 0
    for (item in this) {
        checkIndexOverflow(index)
        if (predicate(item))
            return index
        index++
    }
    return -1
}

Returns index of the last element matching the given [predicate], or -1 if the sequence does not contain such element.

The operation is _terminal_.

public inline fun <T> Sequence<T>.indexOfLast(predicate: (T) -> Boolean): Int {
    var lastIndex = -1
    var index = 0
    for (item in this) {
        checkIndexOverflow(index)
        if (predicate(item))
            lastIndex = index
        index++
    }
    return lastIndex
}

Returns the last element.
@throws [NoSuchElementException] if the sequence is empty.

The operation is _terminal_.

public fun <T> Sequence<T>.last(): T {
    val iterator = iterator()
    if (!iterator.hasNext())
        throw NoSuchElementException("Sequence is empty.")
    var last = iterator.next()
    while (iterator.hasNext())
        last = iterator.next()
    return last
}

Returns the last element matching the given [predicate].
@throws [NoSuchElementException] if no such element is found.

The operation is _terminal_.

public inline fun <T> Sequence<T>.last(predicate: (T) -> Boolean): T {
    var last: T? = null
    var found = false
    for (element in this) {
        if (predicate(element))
            last = element
            found = true
    }
    if (!found)
        throw NoSuchElementException("Sequence contains no element matching the predicate.")
    @Suppress("UNCHECKED_CAST")
    return last as T
}

Returns last index of [element], or -1 if the sequence does not contain element.

The operation is _terminal_.

public fun <@kotlin.internal.OnlyInputTypes T> Sequence<T>.lastIndexOf(element: T): Int {
    var lastIndex = -1
    var index = 0
    for (item in this) {
        checkIndexOverflow(index)
        if (element == item)
            lastIndex = index
        index++
    }
    return lastIndex
}

Returns the last element, or `null` if the sequence is empty.

The operation is _terminal_.

public fun <T> Sequence<T>.lastOrNull(): T? {
    val iterator = iterator()
    if (!iterator.hasNext())
        return null
    var last = iterator.next()
    while (iterator.hasNext())
        last = iterator.next()
    return last
}

Returns the last element matching the given [predicate], or `null` if no such element was found.

The operation is _terminal_.

public inline fun <T> Sequence<T>.lastOrNull(predicate: (T) -> Boolean): T? {
    var last: T? = null
    for (element in this) {
        if (predicate(element))
            last = element
    }
    return last
}

Returns the single element, or throws an exception if the sequence is empty or has more than one element.

The operation is _terminal_.

public fun <T> Sequence<T>.single(): T {
    val iterator = iterator()
    if (!iterator.hasNext())
        throw NoSuchElementException("Sequence is empty.")
    val single = iterator.next()
    if (iterator.hasNext())
        throw IllegalArgumentException("Sequence has more than one element.")
    return single
}

Returns the single element matching the given [predicate], or throws exception if there is no or more than one matching element.

The operation is _terminal_.

public inline fun <T> Sequence<T>.single(predicate: (T) ->

```

```

Boolean): T {
    var single: T? = null
    var found = false
    for (element in this) {
        if (predicate(element))
            if (found) throw IllegalArgumentException("Sequence contains more than one matching element.")
            single = element
            found = true
    }
    if (!found) throw NoSuchElementException("Sequence contains no element matching the predicate.")
    @Suppress("UNCHECKED_CAST")
    return single as T
}

Returns single element, or `null` if the sequence is empty or has more than one element.

The operation is _terminal_.

public fun <T> Sequence<T>.singleOrNull(): T? {
    val iterator = iterator()
    if (!iterator.hasNext())
        return null
    val single = iterator.next()
    if (iterator.hasNext())
        return null
    return single
}

Returns the single element matching the given [predicate], or `null` if element was not found or more than one element was found.

The operation is _terminal_.

public inline fun <T> Sequence<T>.singleOrNull(predicate: (T) -> Boolean): T? {
    var single: T? = null
    var found = false
    for (element in this) {
        if (predicate(element)) {
            if (found) return null
            single = element
            found = true
        }
    }
    if (!found) return null
    return single
}

Returns a sequence containing all elements except first [n] elements.

The operation is _intermediate_ and _stateless_.

@throws IllegalArgumentException if [n] is negative.

sample
samples.collections.Collections.Transformations.drop

public fun <T> Sequence<T>.drop(n: Int): Sequence<T> {
    require(n >= 0) { "Requested element count $n is less than zero." }
    return when {
        n == 0 -> this
        this is DropTakeSequence -> this.drop(n)
        else -> DropSequence(this, n)
    }
}

Returns a sequence containing all elements except first elements that satisfy the given [predicate].

The operation is _intermediate_ and _stateless_.

sample
samples.collections.Collections.Transformations.dropWhile

public fun <T> Sequence<T>.dropWhile(predicate: (T) -> Boolean): Sequence<T> {
    return DropWhileSequence(this, predicate)
}

Returns a sequence containing only elements matching the given [predicate].

The operation is _intermediate_ and _stateless_.

public fun <T> Sequence<T>.filter(predicate: (T) -> Boolean): Sequence<T> {
    return FilteringSequence(this, true, predicate)
}

Returns a sequence containing only elements matching the given [predicate].

@param [predicate] function that takes the index of an element and the element itself
and returns the result of predicate evaluation on the element.

The operation is _intermediate_ and _stateless_.

public fun <T> Sequence<T>.filterIndexed(predicate: (index: Int, T) -> Boolean): Sequence<T> {
    // TODO: Rewrite with generalized MapFilterIndexingSequence
    return TransformingSequence(FilteringSequence(IndexingSequence(this), true, { predicate(it.index, it.value) }), { it.value })
}

Appends all elements matching the given [predicate] to the given [destination].

@param [predicate] function that takes the index of an element and the element itself
and returns the result of predicate evaluation on the element.

The operation is _terminal_.

public inline fun <T, C : MutableCollection<in T>> Sequence<T>.filterIndexedTo(destination: C, predicate: (index: Int, T) -> Boolean): C {
    forEachIndexed { index, element ->
        if (predicate(index, element)) destination.add(element)
    }
    return destination
}

Returns a sequence containing all elements that are instances of specified type parameter R.

The operation is _intermediate_ and _stateless_.

public inline fun <reified R> Sequence<*>.filterIsInstance(): Sequence<@kotlin.internal.NoInfer R> {
    @Suppress("UNCHECKED_CAST")
    return filter { it is R } as Sequence<R>
}

Appends all elements that are instances of specified type parameter R to the given [destination].

The operation is _terminal_.

public inline fun <reified R, C : MutableCollection<in R>> Sequence<*>.filterIsInstanceTo(destination: C): C {
    for (element in this) if (element is R) destination.add(element)
    return destination
}

Returns a sequence containing all elements not matching the given [predicate].

The operation is _intermediate_ and _stateless_.

public fun <T> Sequence<T>.filterNot(predicate: (T) -> Boolean): Sequence<T> {
    return FilteringSequence(this, false, predicate)
}

Returns a sequence containing all elements that are not `null`.

The operation is _intermediate_ and _stateless_.

public fun <T : Any> Sequence<T?>.filterNotNull(): Sequence<T> {
    @Suppress("UNCHECKED_CAST")
    return filterNot { it == null } as Sequence<T>
}

Appends all elements that are not `null` to the given [destination].

The operation is _terminal_.

public fun <C :

```

```

MutableCollection<in T>, T : Any> Sequence<T?>.filterNotNullTo(destination: C): C {
  for (element in this) if (element != null) destination.add(element)
  return destination
}

AppendAll: public inline fun <T, C : MutableCollection<in T>> Sequence<T>.filterNotNullTo(destination: C, predicate: (T) -> Boolean): C {
  for (element in this) if (!predicate(element)) destination.add(element)
  return destination
}

Append: public inline fun <T, C : MutableCollection<in T>> Sequence<T>.filterTo(destination: C, predicate: (T) -> Boolean): C {
  for (element in this) if (predicate(element)) destination.add(element)
  return destination
}

Take: public inline fun <T> Sequence<T>.take(n: Int): Sequence<T> {
  require(n >= 0) { "\"Requested element count $n is less than zero.\""}
  return when {
    n == 0 -> emptySequence()
    this is DropTakeSequence -> this.take(n)
    else -> TakeSequence(this, n)
  }
}

TakeWhile: public inline fun <T> Sequence<T>.takeWhile(predicate: (T) -> Boolean): Sequence<T> {
  return TakeWhileSequence(this, predicate)
}

Sorted: public inline fun <T : Comparable<T>> Sequence<T>.sorted(): Sequence<T> {
  return object : Sequence<T> {
    override fun iterator(): Iterator<T> {
      val sortedList = this@sorted.toMutableList()
      sortedList.sort()
      return sortedList.iterator()
    }
  }
}

SortedBy: public inline fun <T, R : Comparable<R>> Sequence<T>.sortedBy(crossinline selector: (T) -> R?): Sequence<T> {
  return sortedWith(compareBy(selector))
}

SortedByDescending: public inline fun <T, R : Comparable<R>> Sequence<T>.sortedByDescending(crossinline selector: (T) -> R?): Sequence<T> {
  return sortedWith(compareByDescending(selector))
}

SortedDescending: public inline fun <T : Comparable<T>> Sequence<T>.sortedDescending(): Sequence<T> {
  return sortedWith(reverseOrder())
}

SortedWith: public inline fun <T> Sequence<T>.sortedWith(comparator: Comparator<in T>): Sequence<T> {
  return object : Sequence<T> {
    override fun iterator(): Iterator<T> {
      val sortedList = this@sortedWith.toMutableList()
      sortedList.sortWith(comparator)
      return sortedList.iterator()
    }
  }
}

Map: public inline fun <T, K, V> Sequence<T>.associate(transform: (T) -> Pair<K, V>): Map<K, V> {
  return associateTo(LinkedHashMap<K, V>(), transform)
}

AssociateTo: public inline fun <T, K, V> Sequence<T>.associateTo(transform: (T) -> Pair<K, V>): Map<K, V> {
  return associateTo(LinkedHashMap<K, V>(), transform)
}

```





```

_terminal_.\n * \n public fun <T> Sequence<T>.toList(): List<T> {\n    return
this.toMutableList().optimizeReadOnlyList()\n}\n\n/**\n * Returns a [MutableList] filled with all elements of this
sequence.\n * \n * The operation is _terminal_.\n * \n public fun <T> Sequence<T>.toMutableList(): MutableList<T>
{\n    return toCollection(ArrayList<T>())\n}\n\n/**\n * Returns a [Set] of all elements.\n * \n * The returned set
preserves the element iteration order of the original sequence.\n * \n * The operation is _terminal_.\n * \n public fun
<T> Sequence<T>.toSet(): Set<T> {\n    return
toCollection(LinkedHashSet<T>()).optimizeReadOnlySet()\n}\n\n/**\n * Returns a single sequence of all elements
from results of [transform] function being invoked on each element of original sequence.\n * \n * The operation is
_intermediate_ and _stateless_.\n * \n * @sample samples.collections.Collections.Transformations.flatMap\n
*\n public fun <T, R> Sequence<T>.flatMap(transform: (T) -> Sequence<R>): Sequence<R> {\n    return
FlatteningSequence(this, transform, { it.iterator() })\n}\n\n/**\n * Appends all elements yielded from results of
[transform] function being invoked on each element of original sequence, to the given [destination].\n * \n * The
operation is _terminal_.\n * \n public inline fun <T, R, C : MutableCollection<in R>>
Sequence<T>.flatMapTo(destination: C, transform: (T) -> Sequence<R>): C {\n    for (element in this) {\n        val
list = transform(element)\n        destination.addAll(list)\n    }\n    return destination\n}\n\n/**\n * Groups elements of
the original sequence by the key returned by the given [keySelector] function\n * applied to each element and
returns a map where each group key is associated with a list of corresponding elements.\n * \n * The returned map
preserves the entry iteration order of the keys produced from the original sequence.\n * \n * The operation is
_intermediate_.\n * \n * @sample samples.collections.Collections.Transformations.groupBy\n
*\n public inline fun <T,
K> Sequence<T>.groupBy(keySelector: (T) -> K): Map<K, List<T>> {\n    return groupByTo(LinkedHashMap<K,
MutableList<T>>(), keySelector)\n}\n\n/**\n * Groups values returned by the [valueTransform] function applied to
each element of the original sequence\n * by the key returned by the given [keySelector] function applied to the
element\n * and returns a map where each group key is associated with a list of corresponding values.\n * \n * The
returned map preserves the entry iteration order of the keys produced from the original sequence.\n * \n * The
operation is _terminal_.\n * \n * @sample
samples.collections.Collections.Transformations.groupByKeysAndValues\n
*\n public inline fun <T, K, V>
Sequence<T>.groupBy(keySelector: (T) -> K, valueTransform: (T) -> V): Map<K, List<V>> {\n    return
groupByTo(LinkedHashMap<K, MutableList<V>>(), keySelector, valueTransform)\n}\n\n/**\n * Groups elements
of the original sequence by the key returned by the given [keySelector] function\n * applied to each element and
puts to the [destination] map each group key associated with a list of corresponding elements.\n * \n * @return The
[destination] map.\n * \n * The operation is _terminal_.\n * \n * @sample
samples.collections.Collections.Transformations.groupBy\n
*\n public inline fun <T, K, M : MutableMap<in K,
MutableList<T>>> Sequence<T>.groupByTo(destination: M, keySelector: (T) -> K): M {\n    for (element in this)
{\n        val key = keySelector(element)\n        val list = destination.getOrPut(key) { ArrayList<T>() }\n
list.add(element)\n    }\n    return destination\n}\n\n/**\n * Groups values returned by the [valueTransform] function
applied to each element of the original sequence\n * by the key returned by the given [keySelector] function applied
to the element\n * and puts to the [destination] map each group key associated with a list of corresponding values.\n
* \n * @return The [destination] map.\n * \n * The operation is _terminal_.\n * \n * @sample
samples.collections.Collections.Transformations.groupByKeysAndValues\n
*\n public inline fun <T, K, V, M :
MutableMap<in K, MutableList<V>>> Sequence<T>.groupByTo(destination: M, keySelector: (T) -> K,
valueTransform: (T) -> V): M {\n    for (element in this) {\n        val key = keySelector(element)\n        val list =
destination.getOrPut(key) { ArrayList<V>() }\n        list.add(valueTransform(element))\n    }\n    return
destination\n}\n\n/**\n * Creates a [Grouping] source from a sequence to be used later with one of group-and-fold
operations\n * using the specified [keySelector] function to extract a key from each element.\n * \n * The operation is
_intermediate_ and _stateless_.\n * \n * @sample samples.collections.Grouping.groupingByEachCount\n
*\n @SinceKotlin("1.1")\n public inline fun <T, K> Sequence<T>.groupingBy(crossinline keySelector: (T) -> K):
Grouping<T, K> {\n    return object : Grouping<T, K> {\n        override fun sourceIterator(): Iterator<T> =
this@groupingBy.iterator()\n        override fun keyOf(element: T): K = keySelector(element)\n    }\n}\n\n/**\n

```

Returns a sequence containing the results of applying the given [transform] function to each element in the original sequence.

The operation is `_intermediate_` and `_stateless_`.

`@sample`

```
samples.collections.Collections.Transformations.map
public fun <T, R> Sequence<T>.map(transform: (T) -> R): Sequence<R> {
    return TransformingSequence(this, transform)
}
```

Returns a sequence containing the results of applying the given [transform] function to each element and its index in the original sequence.

`@param` [transform] function that takes the index of an element and the element itself and returns the result of the transform applied to the element.

The operation is `_intermediate_` and `_stateless_`.

`@public fun <T, R> Sequence<T>.mapIndexed(transform: (index: Int, T) -> R): Sequence<R> {
 return TransformingIndexedSequence(this, transform)
}`

Returns a sequence containing only the non-null results of applying the given [transform] function to each element and its index in the original sequence.

`@param` [transform] function that takes the index of an element and the element itself and returns the result of the transform applied to the element.

The operation is `_intermediate_` and `_stateless_`.

`@public fun <T, R : Any> Sequence<T>.mapIndexedNotNull(transform: (index: Int, T) -> R?): Sequence<R> {
 return TransformingIndexedSequence(this, transform).filterNotNull()
}`

Applies the given [transform] function to each element and its index in the original sequence and appends only the non-null results to the given [destination].

`@param` [transform] function that takes the index of an element and the element itself and returns the result of the transform applied to the element.

The operation is `_terminal_`.

`@public inline fun <T, R : Any, C : MutableCollection<in R>> Sequence<T>.mapIndexedNotNullTo(destination: C, transform: (index: Int, T) -> R?): C {
 forEachIndexed { index, element -> transform(index, element)?.let { destination.add(it) } }
 return destination
}`

Applies the given [transform] function to each element and its index in the original sequence and appends the results to the given [destination].

`@param` [transform] function that takes the index of an element and the element itself and returns the result of the transform applied to the element.

The operation is `_terminal_`.

`@public inline fun <T, R, C : MutableCollection<in R>> Sequence<T>.mapIndexedTo(destination: C, transform: (index: Int, T) -> R): C {
 var index = 0
 for (item in this)
 destination.add(transform(checkIndexOverflow(index++), item))
 return destination
}`

Returns a sequence containing only the non-null results of applying the given [transform] function to each element in the original sequence.

The operation is `_intermediate_` and `_stateless_`.

`@public fun <T, R : Any> Sequence<T>.mapNotNull(transform: (T) -> R?): Sequence<R> {
 return TransformingSequence(this, transform).filterNotNull()
}`

Applies the given [transform] function to each element in the original sequence and appends only the non-null results to the given [destination].

The operation is `_terminal_`.

`@public inline fun <T, R : Any, C : MutableCollection<in R>> Sequence<T>.mapNotNullTo(destination: C, transform: (T) -> R?): C {
 forEach { element -> transform(element)?.let { destination.add(it) } }
 return destination
}`

Applies the given [transform] function to each element of the original sequence and appends the results to the given [destination].

The operation is `_terminal_`.

`@public inline fun <T, R, C : MutableCollection<in R>> Sequence<T>.mapTo(destination: C, transform: (T) -> R): C {
 for (item in this)
 destination.add(transform(item))
 return destination
}`

Returns a sequence that wraps each element of the original sequence into an [IndexedValue] containing the index of that element and the element itself.

The operation is `_intermediate_` and `_stateless_`.

`@public fun <T> Sequence<T>.withIndex(): Sequence<IndexedValue<T>> {
 return IndexingSequence(this)
}`

Returns a sequence containing only distinct elements from the given sequence.

The elements in the resulting sequence are in the same order as they were in the source sequence.

The operation is `_intermediate_` and `_stateful_`.

`@sample`

```
samples.collections.Collections.Transformations.distinctAndDistinctBy
public fun <T> Sequence<T>.distinct(): Sequence<T> {
    return this.distinctBy { it }
}
```

Returns a sequence containing only elements from the given sequence having distinct keys returned by the given [selector] function.

The elements in the resulting sequence are in the same order as they were in the source sequence.

The operation is `_intermediate_` and `_stateful_`.

`@sample`

```
samples.collections.Collections.Transformations.distinctAndDistinctBy
public fun <T, K> Sequence<T>.distinctBy(selector: (T) -> K): Sequence<T> {
    return DistinctSequence(this, selector)
}
```

\* Returns a mutable set containing all distinct elements from the given sequence.  
 \* The returned set preserves the element iteration order of the original sequence.  
 \* The operation is \_terminal\_.  
 @public fun <T> Sequence<T>.toMutableSet(): MutableSet<T> {  
 val set = LinkedHashSet<T>()  
 for (item in this) set.add(item)  
 return set  
 }  
 \* Returns `true` if all elements match the given [predicate].  
 \* The operation is \_terminal\_.  
 @sample samples.collections.Collections.Aggregates.all  
 @public inline fun <T> Sequence<T>.all(predicate: (T) -> Boolean): Boolean {  
 for (element in this) if (!predicate(element)) return false  
 return true  
 }  
 \* Returns `true` if sequence has at least one element.  
 \* The operation is \_terminal\_.  
 @sample samples.collections.Collections.Aggregates.any  
 @public fun <T> Sequence<T>.any(): Boolean {  
 return iterator().hasNext()  
 }  
 \* Returns `true` if at least one element matches the given [predicate].  
 \* The operation is \_terminal\_.  
 @sample samples.collections.Collections.Aggregates.anyWithPredicate  
 @public inline fun <T> Sequence<T>.any(predicate: (T) -> Boolean): Boolean {  
 for (element in this) if (predicate(element)) return true  
 return false  
 }  
 \* Returns the number of elements in this sequence.  
 \* The operation is \_terminal\_.  
 @public fun <T> Sequence<T>.count(): Int {  
 var count = 0  
 for (element in this) checkCountOverflow(++count)  
 return count  
 }  
 \* Returns the number of elements matching the given [predicate].  
 \* The operation is \_terminal\_.  
 @public inline fun <T> Sequence<T>.count(predicate: (T) -> Boolean): Int {  
 var count = 0  
 for (element in this) if (predicate(element)) checkCountOverflow(++count)  
 return count  
 }  
 \* Accumulates value starting with [initial] value and applying [operation] from left to right to current accumulator value and each element.  
 \* The operation is \_terminal\_.  
 @public inline fun <T, R> Sequence<T>.fold(initial: R, operation: (acc: R, T) -> R): R {  
 var accumulator = initial  
 for (element in this) accumulator = operation(accumulator, element)  
 return accumulator  
 }  
 \* Accumulates value starting with [initial] value and applying [operation] from left to right to current accumulator value and each element with its index in the original sequence.  
 \* @param [operation] function that takes the index of an element, current accumulator value and the element itself, and calculates the next accumulator value.  
 \* The operation is \_terminal\_.  
 @public inline fun <T, R> Sequence<T>.foldIndexed(initial: R, operation: (index: Int, acc: R, T) -> R): R {  
 var index = 0  
 var accumulator = initial  
 for (element in this) accumulator = operation(checkIndexOverflow(index++), accumulator, element)  
 return accumulator  
 }  
 \* Performs the given [action] on each element.  
 \* The operation is \_terminal\_.  
 @public inline fun <T> Sequence<T>.forEach(action: (T) -> Unit): Unit {  
 for (element in this) action(element)  
 }  
 \* Performs the given [action] on each element, providing sequential index with the element.  
 \* @param [action] function that takes the index of an element and the element itself and performs the desired action on the element.  
 \* The operation is \_terminal\_.  
 @public inline fun <T> Sequence<T>.forEachIndexed(action: (index: Int, T) -> Unit): Unit {  
 var index = 0  
 for (item in this) action(checkIndexOverflow(index++), item)  
 }  
 \* Returns the largest element or `null` if there are no elements.  
 \* If any of elements is `NaN` returns `NaN`.  
 \* The operation is \_terminal\_.  
 @SinceKotlin("1.1")  
 @public fun Sequence<Double>.max(): Double? {  
 val iterator = iterator()  
 if (!iterator.hasNext()) return null  
 var max = iterator.next()  
 if (max.isNaN()) return max  
 while (iterator.hasNext()) {  
 val e = iterator.next()  
 if (e.isNaN()) return e  
 if (max < e) max = e  
 }  
 return max  
 }  
 \* Returns the largest element or `null` if there are no elements.  
 \* If any of elements is `NaN` returns `NaN`.  
 \* The operation is \_terminal\_.  
 @SinceKotlin("1.1")  
 @public fun Sequence<Float>.max(): Float? {  
 val iterator = iterator()  
 if (!iterator.hasNext()) return null  
 var max = iterator.next()  
 if (max.isNaN()) return max  
 while (iterator.hasNext()) {  
 val e = iterator.next()  
 if (e.isNaN()) return e  
 if (max < e) max = e  
 }  
 return max  
 }  
 \* Returns the largest element or `null` if there are no elements.  
 \* The operation is \_terminal\_.  
 @public fun <T : Comparable<T>> Sequence<T>.max(): T? {  
 val iterator = iterator()  
 if (!iterator.hasNext()) return null  
 var max = iterator.next()  
 while (iterator.hasNext()) {  
 val e = iterator.next()  
 if (max < e) max = e  
 }  
 return max  
 }  
 \* Returns the first element yielding the largest value of the given function or `null` if there are no elements.  
 \* The operation is \_terminal\_.  
 @sample samples.collections.Collections.Aggregates.maxBy  
 @public inline fun <T, R : Comparable<R>>

```

Sequence<T>.maxBy(selector: (T) -> R): T? {\n    val iterator = iterator()\n    if (!iterator.hasNext()) return null\n    var maxElem = iterator.next()\n    if (!iterator.hasNext()) return maxElem\n    var maxValue = selector(maxElem)\n    do {\n        val e = iterator.next()\n        val v = selector(e)\n        if (maxValue < v) {\n            maxElem = e\n            maxValue = v\n        }\n    } while (iterator.hasNext())\n    return maxElem\n}\n\n/**\n * Returns the first element\n * having the largest value according to the provided [comparator] or `null` if there are no elements.\n *\n * The\n * operation is _terminal_.\n *\n * @public fun <T> Sequence<T>.maxWith(comparator: Comparator<in T>): T? {\n    val\n    iterator = iterator()\n    if (!iterator.hasNext()) return null\n    var max = iterator.next()\n    while (iterator.hasNext())\n    {\n        val e = iterator.next()\n        if (comparator.compare(max, e) < 0) max = e\n    }\n    return max\n}\n\n/**\n * Returns the smallest element or `null` if there are no elements.\n *\n * If any of elements is `NaN` returns `NaN`.\n *\n * The operation is _terminal_.\n *\n * @SinceKotlin("1.1")\n * @public fun Sequence<Double>.min(): Double? {\n    val\n    iterator = iterator()\n    if (!iterator.hasNext()) return null\n    var min = iterator.next()\n    if (min.isNaN()) return\n    min\n    while (iterator.hasNext()) {\n        val e = iterator.next()\n        if (e.isNaN()) return e\n        if (min > e) min\n        = e\n    }\n    return min\n}\n\n/**\n * Returns the smallest element or `null` if there are no elements.\n *\n * If any\n * of elements is `NaN` returns `NaN`.\n *\n * The operation is _terminal_.\n *\n * @SinceKotlin("1.1")\n * @public fun\n    Sequence<Float>.min(): Float? {\n    val iterator = iterator()\n    if (!iterator.hasNext()) return null\n    var min =\n    iterator.next()\n    if (min.isNaN()) return min\n    while (iterator.hasNext()) {\n        val e = iterator.next()\n        if\n        (e.isNaN()) return e\n        if (min > e) min = e\n    }\n    return min\n}\n\n/**\n * Returns the smallest element or\n * `null` if there are no elements.\n *\n * The operation is _terminal_.\n *\n * @public fun <T : Comparable<T>>\n    Sequence<T>.min(): T? {\n    val iterator = iterator()\n    if (!iterator.hasNext()) return null\n    var min =\n    iterator.next()\n    while (iterator.hasNext()) {\n        val e = iterator.next()\n        if (min > e) min = e\n    }\n    return\n    min\n}\n\n/**\n * Returns the first element yielding the smallest value of the given function or `null` if there are no\n * elements.\n *\n * The operation is _terminal_.\n *\n * @sample
samples.collections.Collections.Aggregates.minBy\n *\n * @public inline fun <T, R : Comparable<R>>\n    Sequence<T>.minBy(selector: (T) -> R): T? {\n    val iterator = iterator()\n    if (!iterator.hasNext()) return null\n    var\n    minElem = iterator.next()\n    if (!iterator.hasNext()) return minElem\n    var minValue = selector(minElem)\n    do {\n        val e = iterator.next()\n        val v = selector(e)\n        if (minValue > v) {\n            minElem = e\n           \n            minValue = v\n        }\n    } while (iterator.hasNext())\n    return minElem\n}\n\n/**\n * Returns the first element\n * having the smallest value according to the provided [comparator] or `null` if there are no elements.\n *\n * The\n * operation is _terminal_.\n *\n * @public fun <T> Sequence<T>.minWith(comparator: Comparator<in T>): T? {\n    val\n    iterator = iterator()\n    if (!iterator.hasNext()) return null\n    var min = iterator.next()\n    while (iterator.hasNext())\n    {\n        val e = iterator.next()\n        if (comparator.compare(min, e) > 0) min = e\n    }\n    return min\n}\n\n/**\n * Returns `true` if the sequence has no elements.\n *\n * The operation is _terminal_.\n *\n * @sample\n    samples.collections.Collections.Aggregates.none\n *\n * @public fun <T> Sequence<T>.none(): Boolean {\n    return\n    !iterator().hasNext()\n}\n\n/**\n * Returns `true` if no elements match the given [predicate].\n *\n * The operation is\n * _terminal_.\n *\n * @sample\n    samples.collections.Collections.Aggregates.noneWithPredicate\n *\n * @public inline fun\n    <T> Sequence<T>.none(predicate: (T) -> Boolean): Boolean {\n    for (element in this) if (predicate(element))\n    return false\n    return true\n}\n\n/**\n * Returns a sequence which performs the given [action] on each element of\n * the original sequence as they pass through it.\n *\n * The operation is _intermediate_ and _stateless_.\n *\n * @SinceKotlin("1.1")\n * @public fun <T> Sequence<T>.onEach(action: (T) -> Unit): Sequence<T> {\n    return\n    map {\n        action(it)\n        it\n    }\n}\n\n/**\n * Accumulates value starting with the first element and applying\n * [operation] from left to right to current accumulator value and each element.\n *\n * The operation is _terminal_.\n *\n * @sample\n    samples.collections.Collections.Aggregates.reduce\n *\n * @public inline fun <S, T : S>\n    Sequence<T>.reduce(operation: (acc: S, T) -> S): S {\n    val iterator = this.iterator()\n    if (!iterator.hasNext())\n    throw UnsupportedOperationException("Empty sequence can't be reduced.")\n    var accumulator: S =\n    iterator.next()\n    while (iterator.hasNext()) {\n        accumulator = operation(accumulator, iterator.next())\n    }\n    return\n    accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from\n * left to right\n * to current accumulator value and each element with its index in the original sequence.\n *\n * @param\n * [operation] function that takes the index of an element, current accumulator value\n * and the element itself and

```

calculates the next accumulator value.\n \*\n \* The operation is `_terminal_`.\n \*\n \* @sample samples.collections.Collections.Aggregates.reduce\n \*\npublic inline fun <S, T : S> Sequence<T>.reduceIndexed(operation: (index: Int, acc: S, T) -> S): S {\n val iterator = this.iterator()\n if (!iterator.hasNext()) throw UnsupportedOperationException("Empty sequence can't be reduced.")\n var index = 1\n var accumulator: S = iterator.next()\n while (iterator.hasNext()) {\n accumulator = operation(checkIndexOverflow(index++), accumulator, iterator.next())\n }\n return accumulator}\n}\n\n/\*\*\n \* Accumulates value starting with the first element and applying [operation] from left to right to current accumulator value and each element. Returns null if the sequence is empty.\n \*\n \* The operation is `_terminal_`.\n \*\n \* @sample samples.collections.Collections.Aggregates.reduceOrNull\n \*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun <S, T : S> Sequence<T>.reduceOrNull(operation: (acc: S, T) -> S): S? {\n val iterator = this.iterator()\n if (!iterator.hasNext()) return null\n var accumulator: S = iterator.next()\n while (iterator.hasNext()) {\n accumulator = operation(accumulator, iterator.next())\n }\n return accumulator}\n}\n\n/\*\*\n \* Returns a sequence containing successive accumulation values generated by applying [operation] from left to right\n \* to each element and current accumulator value that starts with [initial] value.\n \*\n \* Note that `acc` value passed to [operation] function should not be mutated;\n \* otherwise it would affect the previous value in resulting sequence.\n \*\n \* The [initial] value should also be immutable (or should not be mutated)\n \* as it may be passed to [operation] function later because of sequence's lazy nature.\n \*\n \* @param [operation] function that takes current accumulator value and an element, and calculates the next accumulator value.\n \*\n \* The operation is `_intermediate_` and `_stateless_`.\n \*\n \* @sample samples.collections.Collections.Aggregates.scan\n \*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun <T, R> Sequence<T>.scan(initial: R, operation: (acc: R, T) -> R): Sequence<R> {\n return sequence {\n yield(initial)\n var accumulator = initial\n for (element in this@scan) {\n accumulator = operation(accumulator, element)\n yield(accumulator)\n }\n }\n}\n\n/\*\*\n \* Returns a sequence containing successive accumulation values generated by applying [operation] from left to right\n \* to each element, its index in the original sequence and current accumulator value that starts with [initial] value.\n \*\n \* Note that `acc` value passed to [operation] function should not be mutated;\n \* otherwise it would affect the previous value in resulting sequence.\n \*\n \* The [initial] value should also be immutable (or should not be mutated)\n \* as it may be passed to [operation] function later because of sequence's lazy nature.\n \*\n \* @param [operation] function that takes the index of an element, current accumulator value\n \* and the element itself, and calculates the next accumulator value.\n \*\n \* The operation is `_intermediate_` and `_stateless_`.\n \*\n \* @sample samples.collections.Collections.Aggregates.scan\n \*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun <T, R> Sequence<T>.scanIndexed(initial: R, operation: (index: Int, acc: R, T) -> R): Sequence<R> {\n return sequence {\n yield(initial)\n var index = 0\n var accumulator = initial\n for (element in this@scanIndexed) {\n accumulator = operation(checkIndexOverflow(index++), accumulator, element)\n yield(accumulator)\n }\n }\n}\n\n/\*\*\n \* Returns a sequence containing successive accumulation values generated by applying [operation] from left to right\n \* to each element and current accumulator value that starts with the first element of this sequence.\n \*\n \* Note that `acc` value passed to [operation] function should not be mutated;\n \* otherwise it would affect the previous value in resulting sequence.\n \*\n \* @param [operation] function that takes current accumulator value and the element, and calculates the next accumulator value.\n \*\n \* The operation is `_intermediate_` and `_stateless_`.\n \*\n \* @sample samples.collections.Collections.Aggregates.scanReduce\n \*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun <S, T : S> Sequence<T>.scanReduce(operation: (acc: S, T) -> S): Sequence<S> {\n return sequence {\n val iterator = iterator()\n if (iterator.hasNext()) {\n var accumulator: S = iterator.next()\n yield(accumulator)\n while (iterator.hasNext()) {\n accumulator = operation(accumulator, iterator.next())\n yield(accumulator)\n }\n }\n }\n}\n\n/\*\*\n \* Returns a sequence containing successive accumulation values generated by applying [operation] from left to right\n \* to each element, its index in the original sequence and current accumulator value that starts with the first element of this sequence.\n \*\n \* Note that `acc` value passed to [operation] function should not be

mutated;\n \* otherwise it would affect the previous value in resulting sequence.\n \* \n \* @param [operation] function that takes the index of an element, current accumulator value\n \* and the element itself, and calculates the next accumulator value.\n \* \n \* The operation is `_intermediate_` and `_stateless_`.\n \* \n \* @sample samples.collections.Collections.Aggregates.scanReduce

```

*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun <S, T : S>
Sequence<T>.scanReduceIndexed(operation: (index: Int, acc: S, T) -> S): Sequence<S> {
    return sequence {
        val iterator = iterator()
        if (iterator.hasNext()) {
            var accumulator: S = iterator.next()
            yield(accumulator)
            var index = 1
            while (iterator.hasNext()) {
                accumulator =
                operation(checkIndexOverflow(index++), accumulator, iterator.next())
                yield(accumulator)
            }
        }
    }
}

```

\n \*\*\n \* Returns the sum of all values produced by [selector] function applied to each element in the sequence.\n \* \n \* The operation is `_terminal_`.\n \* \n public inline fun <T> Sequence<T>.sumBy(selector: (T) -> Int): Int {
 var sum: Int = 0
 for (element in this) {
 sum += selector(element)
 }
 return sum
}

\n \*\*\n \* Returns the sum of all values produced by [selector] function applied to each element in the sequence.\n \* \n \* The operation is `_terminal_`.\n \* \n public inline fun <T> Sequence<T>.sumByDouble(selector: (T) -> Double): Double {
 var sum: Double = 0.0
 for (element in this) {
 sum += selector(element)
 }
 return sum
}

\n \*\*\n \* Returns an original collection containing all the non-`null` elements, throwing an [IllegalArgumentException] if there are any `null` elements.\n \* \n \* The operation is `_intermediate_` and `_stateless_`.\n \* \n public fun <T : Any> Sequence<T?>.requireNonNulls(): Sequence<T> {
 return map { it ?: throw IllegalArgumentException("null element found in \$this.") }
}

\n \*\*\n \* Splits this sequence into a sequence of lists each not exceeding the given [size].\n \* \n \* The last list in the resulting sequence may have less elements than the given [size].\n \* \n \* @param size the number of elements to take in each list, must be positive and can be greater than the number of elements in this sequence.\n \* \n \* The operation is `_intermediate_` and `_stateful_`.\n \* \n \* @sample samples.collections.Collections.Transformations.chunked

```

*\n@SinceKotlin("1.2")\npublic fun <T> Sequence<T>.chunked(size: Int): Sequence<List<T>> {
    return windowed(size, size, partialWindows = true)
}

```

\n \*\*\n \* Splits this sequence into several lists each not exceeding the given [size]\n \* and applies the given [transform] function to an each.\n \* \n \* @return sequence of results of the [transform] applied to an each list.\n \* \n \* Note that the list passed to the [transform] function is ephemeral and is valid only inside that function.\n \* You should not store it or allow it to escape in some way, unless you made a snapshot of it.\n \* The last list may have less elements than the given [size].\n \* \n \* @param size the number of elements to take in each list, must be positive and can be greater than the number of elements in this sequence.\n \* \n \* The operation is `_intermediate_` and `_stateful_`.\n \* \n \* @sample samples.text.Strings.chunkedTransform

```

*\n@SinceKotlin("1.2")\npublic fun <T, R> Sequence<T>.chunked(size: Int, transform: (List<T>) -> R):
Sequence<R> {
    return windowed(size, size, partialWindows = true, transform = transform)
}

```

\n \*\*\n \* Returns a sequence containing all elements of the original sequence without the first occurrence of the given [element].\n \* \n \* The operation is `_intermediate_` and `_stateless_`.\n \* \n public operator fun <T> Sequence<T>.minus(element: T): Sequence<T> {
 return object: Sequence<T> {
 override fun iterator(): Iterator<T> {
 var removed = false
 return this@minus.filter { if (!removed && it == element) {
 removed = true; false } else true }.iterator()
 }
 }
}

\n \*\*\n \* Returns a sequence containing all elements of original sequence except the elements contained in the given [elements] array.\n \* \n \* Note that the source sequence and the array being subtracted are iterated only when an `iterator` is requested from\n \* the resulting sequence. Changing any of them between successive calls to `iterator` may affect the result.\n \* \n \* The [elements] array may be converted to a [HashSet] to speed up the operation, thus the elements are required to have\n \* a correct and stable implementation of `hashCode()` that doesn't change between successive invocations.\n \* \n \* The operation is `_intermediate_` and `_stateful_`.\n \* \n public operator fun <T> Sequence<T>.minus(elements: Array<out T>): Sequence<T> {
 if (elements.isEmpty()) return this
 return object: Sequence<T> {
 override fun iterator(): Iterator<T> {
 val other = elements.toHashSet()
 return this@minus.filterNot { it in other }.iterator()
 }
 }
}

\n \*\*\n \* Returns a sequence containing all elements of original sequence except the elements contained in the given [elements] collection.\n \* \n \* Note that the source sequence and the collection

being subtracted are iterated only when an `iterator` is requested from the resulting sequence. Changing any of them between successive calls to `iterator` may affect the result.

The [elements] collection may be converted to a [HashSet] to speed up the operation, thus the elements are required to have a correct and stable implementation of `hashCode()` that doesn't change between successive invocations.

The operation is `_intermediate_ and _stateful_`.

```

public operator fun <T> Sequence<T>.minus(elements: Iterable<T>):
Sequence<T> {
    return object: Sequence<T> {
        override fun iterator(): Iterator<T> {
            val other =
                elements.convertToSetForSetOperation()
                if (other.isEmpty())
                    return this@minus.iterator()
                else
                    return this@minus.filterNot { it in other }.iterator()
        }
    }
}

```

Returns a sequence containing all elements of original sequence except the elements contained in the given [elements] sequence.

Note that the source sequence and the sequence being subtracted are iterated only when an `iterator` is requested from the resulting sequence. Changing any of them between successive calls to `iterator` may affect the result.

The operation is `_intermediate_` for this sequence and `_terminal_ and _stateful_` for the [elements] sequence.

The [elements] sequence may be converted to a [HashSet] to speed up the operation, thus the elements are required to have a correct and stable implementation of `hashCode()` that doesn't change between successive invocations.

```

public operator fun <T> Sequence<T>.minus(elements: Sequence<T>): Sequence<T> {
    return object: Sequence<T> {
        override fun iterator(): Iterator<T> {
            val other =
                elements.toHashSet()
                if (other.isEmpty())
                    return this@minus.iterator()
                else
                    return this@minus.filterNot { it in other }.iterator()
        }
    }
}

```

Returns a sequence containing all elements of the original sequence without the first occurrence of the given [element].

The operation is `_intermediate_ and _stateless_`.

```

@kotlin.internal.InlineOnly
public inline fun <T>
Sequence<T>.minusElement(element: T): Sequence<T> {
    return minus(element)
}

```

Splits the original sequence into pair of lists, where `*first*` list contains elements for which [predicate] yielded `true`, while `*second*` list contains elements for which [predicate] yielded `false`.

The operation is `_terminal_`.

```

public inline fun <T> Sequence<T>.partition(predicate: (T) -> Boolean): Pair<List<T>, List<T>> {
    val first = ArrayList<T>()
    val second = ArrayList<T>()
    for (element in this) {
        if (predicate(element)) {
            first.add(element)
        } else {
            second.add(element)
        }
    }
    return Pair(first, second)
}

```

Returns a sequence containing all elements of the original sequence and then the given [element].

The operation is `_intermediate_ and _stateless_`.

```

public operator fun <T>
Sequence<T>.plus(element: T): Sequence<T> {
    return sequenceOf(this,
        sequenceOf(element)).flatten()
}

```

Returns a sequence containing all elements of original sequence and then all elements of the given [elements] array.

Note that the source sequence and the array being added are iterated only when an `iterator` is requested from the resulting sequence. Changing any of them between successive calls to `iterator` may affect the result.

The operation is `_intermediate_ and _stateless_`.

```

public operator fun <T> Sequence<T>.plus(elements: Array<out T>): Sequence<T> {
    return
        this.plus(elements.asList())
}

```

Returns a sequence containing all elements of original sequence and then all elements of the given [elements] collection.

Note that the source sequence and the collection being added are iterated only when an `iterator` is requested from the resulting sequence. Changing any of them between successive calls to `iterator` may affect the result.

The operation is `_intermediate_ and _stateless_`.

```

public operator fun <T> Sequence<T>.plus(elements: Iterable<T>): Sequence<T> {
    return sequenceOf(this,
        elements.asSequence()).flatten()
}

```

Returns a sequence containing all elements of original sequence and then all elements of the given [elements] sequence.

Note that the source sequence and the sequence being added are iterated only when an `iterator` is requested from the resulting sequence. Changing any of them between successive calls to `iterator` may affect the result.

The operation is `_intermediate_ and _stateless_`.

```

public operator fun <T> Sequence<T>.plus(elements: Sequence<T>): Sequence<T> {
    return
        sequenceOf(this, elements).flatten()
}

```

Returns a sequence containing all elements of the original sequence and then the given [element].

The operation is `_intermediate_ and _stateless_`.

```

@kotlin.internal.InlineOnly
public inline fun <T> Sequence<T>.plusElement(element: T): Sequence<T> {
    return plus(element)
}

```

Returns a sequence of snapshots of the window of the given [size] sliding



along this sequence with the given [step], where each snapshot is a list. Several last lists may have less elements than the given [size]. Both [size] and [step] must be positive and can be greater than the number of elements in this sequence. @param size the number of elements to take in each window @param step the number of elements to move the window forward by on an each step, by default 1 @param partialWindows controls whether or not to keep partial windows in the end if any, by default `false` which means partial windows won't be preserved @sample samples.collections.Sequences.Transformations.takeWindows

```

@SinceKotlin("1.2")
public fun <T> Sequence<T>.windowed(size: Int, step: Int = 1, partialWindows: Boolean = false): Sequence<List<T>> {
    return windowedSequence(size, step, partialWindows, reuseBuffer = false)
}

```

Returns a sequence of results of applying the given [transform] function to an each list representing a view over the window of the given [size] sliding along this sequence with the given [step]. Note that the list passed to the [transform] function is ephemeral and is valid only inside that function. You should not store it or allow it to escape in some way, unless you made a snapshot of it. Several last lists may have less elements than the given [size]. Both [size] and [step] must be positive and can be greater than the number of elements in this sequence. @param size the number of elements to take in each window @param step the number of elements to move the window forward by on an each step, by default 1 @param partialWindows controls whether or not to keep partial windows in the end if any, by default `false` which means partial windows won't be preserved @sample

```

samples.collections.Sequences.Transformations.averageWindows
@SinceKotlin("1.2")
public fun <T, R> Sequence<T>.windowed(size: Int, step: Int = 1, partialWindows: Boolean = false, transform: (List<T>) -> R): Sequence<R> {
    return windowedSequence(size, step, partialWindows, reuseBuffer = true).map(transform)
}

```

Returns a sequence of values built from the elements of `this` sequence and the [other] sequence with the same index. The resulting sequence ends as soon as the shortest input sequence ends. The operation is `_intermediate_` and `_stateless_`. @sample

```

samples.collections.Sequences.Transformations.zip
public infix fun <T, R> Sequence<T>.zip(other: Sequence<R>): Sequence<Pair<T, R>> {
    return MergingSequence(this, other) { t1, t2 -> t1 to t2 }
}

```

Returns a sequence of values built from the elements of `this` sequence and the [other] sequence with the same index using the provided [transform] function applied to each pair of elements. The resulting sequence ends as soon as the shortest input sequence ends. The operation is `_intermediate_` and `_stateless_`. @sample

```

samples.collections.Sequences.Transformations.zipWithTransform
public fun <T, R, V> Sequence<T>.zip(other: Sequence<R>, transform: (a: T, b: R) -> V): Sequence<V> {
    return MergingSequence(this, other, transform)
}

```

Returns a sequence of pairs of each two adjacent elements in this sequence. The returned sequence is empty if this sequence contains less than two elements. The operation is `_intermediate_` and `_stateless_`. @sample

```

samples.collections.Collections.Transformations.zipWithNext
@SinceKotlin("1.2")
public fun <T> Sequence<T>.zipWithNext(): Sequence<Pair<T, T>> {
    return zipWithNext { a, b -> a to b }
}

```

Returns a sequence containing the results of applying the given [transform] function to an each pair of two adjacent elements in this sequence. The returned sequence is empty if this sequence contains less than two elements. The operation is `_intermediate_` and `_stateless_`. @sample

```

samples.collections.Collections.Transformations.zipWithNextToFindDeltas
@SinceKotlin("1.2")
public fun <T, R> Sequence<T>.zipWithNext(transform: (a: T, b: T) -> R): Sequence<R> {
    return sequenceResult@ {
        val iterator = iterator()
        if (!iterator.hasNext()) return @result
        var current = iterator.next()
        while (iterator.hasNext()) {
            val next = iterator.next()
            yield(transform(current, next))
            current = next
        }
    }
}

```

Appends the string from all the elements separated using [separator] and using the given [prefix] and [postfix] if supplied. If the collection could be huge, you can specify a non-negative value of [limit], in which case only the first [limit] elements will be appended, followed by the [truncated] string (which defaults to "..."). The operation is `_terminal_`. @sample

```

samples.collections.Collections.Transformations.joinTo
public fun <T, A : Appendable> Sequence<T>.joinTo(buffer: A, separator: CharSequence = ", ", prefix: CharSequence = "\\", postfix:

```



```

return sum\n}\n\n/**\n * Returns the sum of all elements in the sequence.\n *\n * The operation is _terminal_.\n *\n@kotlin.jvm.JvmName("\sumOfFloat")\npublic fun Sequence<Float>.sum(): Float {\n    var sum: Float = 0.0f\n    for (element in this) {\n        sum += element\n    }\n    return sum\n}\n\n/**\n * Returns the sum of all elements in the sequence.\n *\n * The operation is _terminal_.\n *\n@kotlin.jvm.JvmName("\sumOfDouble")\npublic fun Sequence<Double>.sum(): Double {\n    var sum: Double = 0.0\n    for (element in this) {\n        sum += element\n    }\n    return sum\n}\n\n"/\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("\SetsKt")\n\npackage kotlin.collections\n\n// NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt\n// See: https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib\n\nimport kotlin.random.*\nimport kotlin.ranges.contains\nimport kotlin.ranges.reversed\n\n/**\n * Returns a set containing all elements of the original set except the given [element].\n *\n * The returned set preserves the element iteration order of the original set.\n *\npublic operator fun <T> Set<T>.minus(element: T): Set<T> {\n    val result = LinkedHashSet<T>(mapCapacity(size))\n    var removed = false\n    return this.filterTo(result) { if (!removed && it == element) { removed = true; false } else true }\n}\n\n/**\n * Returns a set containing all elements of the original set except the elements contained in the given [elements] array.\n *\n * The returned set preserves the element iteration order of the original set.\n *\n * The [elements] array may be converted to a [HashSet] to speed up the operation, thus the elements are required to have\n * a correct and stable implementation of `hashCode()` that doesn't change between successive invocations.\n *\npublic operator fun <T> Set<T>.minus(elements: Array<out T>): Set<T> {\n    val result = LinkedHashSet<T>(this)\n    result.removeAll(elements)\n    return result\n}\n\n/**\n * Returns a set containing all elements of the original set except the elements contained in the given [elements] collection.\n *\n * The returned set preserves the element iteration order of the original set.\n *\n * The [elements] collection may be converted to a [HashSet] to speed up the operation, thus the elements are required to have\n * a correct and stable implementation of `hashCode()` that doesn't change between successive invocations.\n *\npublic operator fun <T> Set<T>.minus(elements: Iterable<T>): Set<T> {\n    val other = elements.convertToSetForSetOperationWith(this)\n    if (other.isEmpty())\n        return this.toSet()\n    if (other is Set)\n        return this.filterNotTo(LinkedHashSet<T>()) { it in other }\n    val result = LinkedHashSet<T>(this)\n    result.removeAll(other)\n    return result\n}\n\n/**\n * Returns a set containing all elements of the original set except the elements contained in the given [elements] sequence.\n *\n * The returned set preserves the element iteration order of the original set.\n *\n * The [elements] sequence may be converted to a [HashSet] to speed up the operation, thus the elements are required to have\n * a correct and stable implementation of `hashCode()` that doesn't change between successive invocations.\n *\npublic operator fun <T> Set<T>.minus(elements: Sequence<T>): Set<T> {\n    val result = LinkedHashSet<T>(this)\n    result.removeAll(elements)\n    return result\n}\n\n/**\n * Returns a set containing all elements of the original set except the given [element].\n *\n * The returned set preserves the element iteration order of the original set.\n *\n@kotlin.internal.InlineOnly\npublic inline fun <T> Set<T>.minusElement(element: T): Set<T> {\n    return minus(element)\n}\n\n/**\n * Returns a set containing all elements of the original set and then the given [element] if it isn't already in this set.\n *\n * The returned set preserves the element iteration order of the original set.\n *\npublic operator fun <T> Set<T>.plus(element: T): Set<T> {\n    val result = LinkedHashSet<T>(mapCapacity(size + 1))\n    result.addAll(this)\n    result.add(element)\n    return result\n}\n\n/**\n * Returns a set containing all elements of the original set and the given [elements] array,\n * which aren't already in this set.\n *\n * The returned set preserves the element iteration order of the original set.\n *\npublic operator fun <T> Set<T>.plus(elements: Array<out T>): Set<T> {\n    val result = LinkedHashSet<T>(mapCapacity(this.size + elements.size))\n    result.addAll(this)\n    result.addAll(elements)\n    return result\n}\n\n/**\n * Returns a set containing all elements of the original set and the given [elements] collection,\n * which aren't already in this set.\n *\n * The returned set preserves the element iteration order of the original set.\n *\npublic operator fun <T> Set<T>.plus(elements: Iterable<T>): Set<T> {\n    val result = LinkedHashSet<T>(mapCapacity(elements.collectionSizeOrNull()?.let { this.size + it } ?: this.size *

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2))\n result.addAll(this)\n result.addAll(elements)\n return result\n}\n\n/**\n * Returns a set containing all
elements of the original set and the given [elements] sequence,\n * which aren't already in this set.\n * \n * The
returned set preserves the element iteration order of the original set.\n */\npublic operator fun <T>
Set<T>.plus(elements: Sequence<T>): Set<T> {\n    val result = LinkedHashSet<T>(mapCapacity(this.size * 2))\n
result.addAll(this)\n result.addAll(elements)\n return result\n}\n\n/**\n * Returns a set containing all elements of
the original set and then the given [element] if it isn't already in this set.\n * \n * The returned set preserves the
element iteration order of the original set.\n */\n@kotlin.internal.InlineOnly\npublic inline fun <T>
Set<T>.plusElement(element: T): Set<T> {\n    return plus(element)\n}\n\n"/**\n * Copyright 2010-2019 JetBrains
s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0
license that can be found in the license/LICENSE.txt file.\n
*\n*\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("\\StringsKt")\n\npackage
kotlin.text\n\n/\n// NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt\n// See:
https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib\n\nimport kotlin.random.*\n\n/**\n * Returns a
character at the given [index] or throws an [IndexOutOfBoundsException] if the [index] is out of bounds of this char
sequence.\n * \n * @sample samples.collections.Collections.Elements.elementAt\n */\npublic expect fun
CharSequence.elementAt(index: Int): Char\n\n/**\n * Returns a character at the given [index] or the result of calling
the [defaultValue] function if the [index] is out of bounds of this char sequence.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrElse\n */\n@kotlin.internal.InlineOnly\npublic inline fun
CharSequence.elementAtOrElse(index: Int, defaultValue: (Int) -> Char): Char {\n    return if (index >= 0 && index
<= lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns a character at the given [index] or `null` if
the [index] is out of bounds of this char sequence.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrNull\n */\n@kotlin.internal.InlineOnly\npublic inline fun
CharSequence.elementAtOrNull(index: Int): Char? {\n    return this.getOrNull(index)\n}\n\n/**\n * Returns the first
character matching the given [predicate], or `null` if no such character was found.\n
*\n*\n@kotlin.internal.InlineOnly\npublic inline fun CharSequence.find(predicate: (Char) -> Boolean): Char? {\n
return firstOrNull(predicate)\n}\n\n/**\n * Returns the last character matching the given [predicate], or `null` if no
such character was found.\n */\n@kotlin.internal.InlineOnly\npublic inline fun CharSequence.findLast(predicate:
(Char) -> Boolean): Char? {\n    return lastOrNull(predicate)\n}\n\n/**\n * Returns first character.\n * @throws
[NoSuchElementException] if the char sequence is empty.\n */\npublic fun CharSequence.first(): Char {\n    if
(isEmpty())\n        throw NoSuchElementException("Char sequence is empty.")\n    return this[0]\n}\n\n/**\n *
Returns the first character matching the given [predicate].\n * @throws [NoSuchElementException] if no such
character is found.\n */\npublic inline fun CharSequence.first(predicate: (Char) -> Boolean): Char {\n    for (element
in this) if (predicate(element)) return element\n    throw NoSuchElementException("Char sequence contains no
character matching the predicate.")\n}\n\n/**\n * Returns the first character, or `null` if the char sequence is
empty.\n */\npublic fun CharSequence.firstOrNull(): Char? {\n    return if (isEmpty()) null else this[0]\n}\n\n/**\n *
Returns the first character matching the given [predicate], or `null` if character was not found.\n */\npublic inline fun
CharSequence.firstOrNull(predicate: (Char) -> Boolean): Char? {\n    for (element in this) if (predicate(element))
return element\n    return null\n}\n\n/**\n * Returns a character at the given [index] or the result of calling the
[defaultValue] function if the [index] is out of bounds of this char sequence.\n
*\n*\n@kotlin.internal.InlineOnly\npublic inline fun CharSequence.getOrElse(index: Int, defaultValue: (Int) -> Char):
Char {\n    return if (index >= 0 && index <= lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns a
character at the given [index] or `null` if the [index] is out of bounds of this char sequence.\n */\npublic fun
CharSequence.getOrNull(index: Int): Char? {\n    return if (index >= 0 && index <= lastIndex) get(index) else
null\n}\n\n/**\n * Returns index of the first character matching the given [predicate], or -1 if the char sequence does
not contain such character.\n */\npublic inline fun CharSequence.indexOfFirst(predicate: (Char) -> Boolean): Int {\n
for (index in indices) {\n    if (predicate(this[index])) {\n        return index\n    }\n}\n    return -
1\n}\n\n/**\n * Returns index of the last character matching the given [predicate], or -1 if the char sequence does
not contain such character.\n */\npublic inline fun CharSequence.indexOfLast(predicate: (Char) -> Boolean): Int {\n

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for (index in indices.reversed()) {\n    if (predicate(this[index])) {\n        return index\n    }\n}\n return -
1\n}\n\n/**\n * Returns the last character.\n * @throws [NoSuchElementException] if the char sequence is empty.\n */\npublic fun CharSequence.last(): Char {\n    if (isEmpty())\n        throw NoSuchElementException("Char
sequence is empty.")\n    return this[lastIndex]\n}\n\n/**\n * Returns the last character matching the given
[predicate].\n * @throws [NoSuchElementException] if no such character is found.\n */\npublic inline fun
CharSequence.last(predicate: (Char) -> Boolean): Char {\n    for (index in this.indices.reversed()) {\n        val
element = this[index]\n        if (predicate(element)) return element\n    }\n    throw NoSuchElementException("Char
sequence contains no character matching the predicate.")\n}\n\n/**\n * Returns the last character, or `null` if the
char sequence is empty.\n */\npublic fun CharSequence.lastOrNull(): Char? {\n    return if (isEmpty()) null else
this[length - 1]\n}\n\n/**\n * Returns the last character matching the given [predicate], or `null` if no such character
was found.\n */\npublic inline fun CharSequence.lastOrNull(predicate: (Char) -> Boolean): Char? {\n    for (index in
this.indices.reversed()) {\n        val element = this[index]\n        if (predicate(element)) return element\n    }\n
return null\n}\n\n/**\n * Returns a random character from this char sequence.\n * \n * @throws
NoSuchElementException if this char sequence is empty.\n */\n\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun CharSequence.random(): Char {\n
return random(Random)\n}\n\n/**\n * Returns a random character from this char sequence using the specified
source of randomness.\n * \n * @throws NoSuchElementException if this char sequence is empty.\n */\n\n@SinceKotlin("1.3")\npublic fun CharSequence.random(random: Random): Char {\n    if (isEmpty())\n        throw NoSuchElementException("Char sequence is empty.")\n    return get(random.nextInt(length))\n}\n\n/**\n *
Returns a random character from this char sequence, or `null` if this char sequence is empty.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
CharSequence.randomOrNull(): Char? {\n    return randomOrNull(Random)\n}\n\n/**\n * Returns a random
character from this char sequence using the specified source of randomness, or `null` if this char sequence is
empty.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun CharSequence.randomOrNull(random:
Random): Char? {\n    if (isEmpty())\n        return null\n    return get(random.nextInt(length))\n}\n\n/**\n * Returns
the single character, or throws an exception if the char sequence is empty or has more than one character.\n */\n\npublic fun CharSequence.single(): Char {\n    return when (length) {\n        0 -> throw
NoSuchElementException("Char sequence is empty.")\n        1 -> this[0]\n        else -> throw
IllegalArgumentException("Char sequence has more than one element.")\n    }\n}\n\n/**\n * Returns the single
character matching the given [predicate], or throws exception if there is no or more than one matching character.\n */\n\npublic inline fun CharSequence.single(predicate: (Char) -> Boolean): Char {\n    var single: Char? = null\n    var
found = false\n    for (element in this) {\n        if (predicate(element)) {\n            if (found) throw
IllegalArgumentException("Char sequence contains more than one matching element.")\n            single =
element\n            found = true\n        }\n    }\n    if (!found) throw NoSuchElementException("Char sequence
contains no character matching the predicate.")\n    @SuppressWarnings("UNCHECKED_CAST")\n    return single as
Char\n}\n\n/**\n * Returns single character, or `null` if the char sequence is empty or has more than one character.\n */\n\npublic fun CharSequence.singleOrNull(): Char? {\n    return if (length == 1) this[0] else null\n}\n\n/**\n *
Returns the single character matching the given [predicate], or `null` if character was not found or more than one
character was found.\n */\n\npublic inline fun CharSequence.singleOrNull(predicate: (Char) -> Boolean): Char? {\n
var single: Char? = null\n    var found = false\n    for (element in this) {\n        if (predicate(element)) {\n
            if (found) return null\n            single = element\n            found = true\n        }\n    }\n    if (!found) return null\n    return
single\n}\n\n/**\n * Returns a subsequence of this char sequence with the first [n] characters removed.\n * \n *
@throws IllegalArgumentException if [n] is negative.\n * \n * @sample samples.text.Strings.drop\n */\n\npublic fun
CharSequence.drop(n: Int): CharSequence {\n    require(n >= 0) { "Requested character count $n is less than zero."
}\n    return subSequence(n.coerceAtMost(length), length)\n}\n\n/**\n * Returns a string with the first [n] characters
removed.\n * \n * @throws IllegalArgumentException if [n] is negative.\n * \n * @sample
samples.text.Strings.drop\n */\n\npublic fun String.drop(n: Int): String {\n    require(n >= 0) { "Requested character
count $n is less than zero." }\n    return substring(n.coerceAtMost(length))\n}\n\n/**\n * Returns a subsequence of

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this char sequence with the last [n] characters removed.\n * \n * @throws IllegalArgumentException if [n] is
negative.\n * \n * @sample samples.text.Strings.drop\n * \n public fun CharSequence.dropLast(n: Int):
CharSequence {\n     require(n >= 0) { \"Requested character count $n is less than zero.\" }\n     return take((length -
n).coerceAtLeast(0))\n}\n\n/**\n * Returns a string with the last [n] characters removed.\n * \n * @throws
IllegalArgumentException if [n] is negative.\n * \n * @sample samples.text.Strings.drop\n * \n public fun
String.dropLast(n: Int): String {\n     require(n >= 0) { \"Requested character count $n is less than zero.\" }\n     return
take((length - n).coerceAtLeast(0))\n}\n\n/**\n * Returns a subsequence of this char sequence containing all
characters except last characters that satisfy the given [predicate].\n * \n * @sample samples.text.Strings.drop\n
* \n public inline fun CharSequence.dropLastWhile(predicate: (Char) -> Boolean): CharSequence {\n     for (index in
lastIndex downTo 0)\n         if (!predicate(this[index]))\n             return subSequence(0, index + 1)\n     return
\"\"\n}\n\n/**\n * Returns a string containing all characters except last characters that satisfy the given [predicate].\n
* \n * @sample samples.text.Strings.drop\n * \n public inline fun String.dropLastWhile(predicate: (Char) ->
Boolean): String {\n     for (index in lastIndex downTo 0)\n         if (!predicate(this[index]))\n             return
substring(0, index + 1)\n     return \"\"\n}\n\n/**\n * Returns a subsequence of this char sequence containing all
characters except first characters that satisfy the given [predicate].\n * \n * @sample samples.text.Strings.drop\n
* \n public inline fun CharSequence.dropWhile(predicate: (Char) -> Boolean): CharSequence {\n     for (index in
this.indices)\n         if (!predicate(this[index]))\n             return subSequence(index, length)\n     return \"\"\n}\n\n/**\n * Returns a string containing all characters except first characters that satisfy the given [predicate].\n
* \n * @sample samples.text.Strings.drop\n * \n public inline fun String.dropWhile(predicate: (Char) -> Boolean): String
{\n     for (index in this.indices)\n         if (!predicate(this[index]))\n             return substring(index)\n     return
\"\"\n}\n\n/**\n * Returns a char sequence containing only those characters from the original char sequence that
match the given [predicate].\n * \n public inline fun CharSequence.filter(predicate: (Char) -> Boolean):
CharSequence {\n     return filterTo(StringBuilder(), predicate)\n}\n\n/**\n * Returns a string containing only those
characters from the original string that match the given [predicate].\n * \n public inline fun String.filter(predicate:
(Char) -> Boolean): String {\n     return filterTo(StringBuilder(), predicate).toString()\n}\n\n/**\n * Returns a char
sequence containing only those characters from the original char sequence that match the given [predicate].\n *
@param [predicate] function that takes the index of a character and the character itself\n * and returns the result of
predicate evaluation on the character.\n * \n public inline fun CharSequence.filterIndexed(predicate: (index: Int,
Char) -> Boolean): CharSequence {\n     return filterIndexedTo(StringBuilder(), predicate)\n}\n\n/**\n * Returns a
string containing only those characters from the original string that match the given [predicate].\n * @param
[predicate] function that takes the index of a character and the character itself\n * and returns the result of predicate
evaluation on the character.\n * \n public inline fun String.filterIndexed(predicate: (index: Int, Char) -> Boolean):
String {\n     return filterIndexedTo(StringBuilder(), predicate).toString()\n}\n\n/**\n * Appends all characters
matching the given [predicate] to the given [destination].\n * @param [predicate] function that takes the index of a
character and the character itself\n * and returns the result of predicate evaluation on the character.\n * \n public
inline fun <C : Appendable> CharSequence.filterIndexedTo(destination: C, predicate: (index: Int, Char) ->
Boolean): C {\n     forEachIndexed { index, element ->\n         if (predicate(index, element))\n             destination.append(element)\n     }\n     return destination\n}\n\n/**\n * Returns a char sequence containing only
those characters from the original char sequence that do not match the given [predicate].\n * \n public inline fun
CharSequence.filterNot(predicate: (Char) -> Boolean): CharSequence {\n     return filterNotTo(StringBuilder(),
predicate)\n}\n\n/**\n * Returns a string containing only those characters from the original string that do not match
the given [predicate].\n * \n public inline fun String.filterNot(predicate: (Char) -> Boolean): String {\n     return
filterNotTo(StringBuilder(), predicate).toString()\n}\n\n/**\n * Appends all characters not matching the given
[predicate] to the given [destination].\n * \n public inline fun <C : Appendable>
CharSequence.filterNotTo(destination: C, predicate: (Char) -> Boolean): C {\n     for (element in this) if
(!predicate(element)) destination.append(element)\n     return destination\n}\n\n/**\n * Appends all characters
matching the given [predicate] to the given [destination].\n * \n public inline fun <C : Appendable>
CharSequence.filterTo(destination: C, predicate: (Char) -> Boolean): C {\n     for (index in 0 until length) {\n         val

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element = get(index)\n    if (predicate(element)) destination.append(element)\n } \n return
destination\n}\n\n/**\n * Returns a char sequence containing characters of the original char sequence at the
specified range of [indices].\n */\npublic fun CharSequence.slice(indices: IntRange): CharSequence {\n    if
(indices.isEmpty()) return ""\n    return subSequence(indices)\n}\n\n/**\n * Returns a string containing characters
of the original string at the specified range of [indices].\n */\npublic fun String.slice(indices: IntRange): String {\n
if (indices.isEmpty()) return ""\n    return substring(indices)\n}\n\n/**\n * Returns a char sequence containing
characters of the original char sequence at specified [indices].\n */\npublic fun CharSequence.slice(indices:
Iterable<Int>): CharSequence {\n    val size = indices.collectionSizeOrDefault(10)\n    if (size == 0) return ""\n
val result = StringBuilder(size)\n    for (i in indices) {\n        result.append(get(i))\n    }\n    return result\n}\n\n/**\n
* Returns a string containing characters of the original string at specified [indices].\n */\n\n@kotlin.internal.InlineOnly\npublic inline fun String.slice(indices: Iterable<Int>): String {\n    return (this as
CharSequence).slice(indices).toString()\n}\n\n/**\n * Returns a subsequence of this char sequence containing the
first [n] characters from this char sequence, or the entire char sequence if this char sequence is shorter.\n * \n *
@throws IllegalArgumentException if [n] is negative.\n * \n * @sample samples.text.Strings.take\n */\npublic fun
CharSequence.take(n: Int): CharSequence {\n    require(n >= 0) { "Requested character count $n is less than zero." }\n
return subSequence(0, n.coerceAtMost(length))\n}\n\n/**\n * Returns a string containing the first [n]
characters from this string, or the entire string if this string is shorter.\n * \n * @throws IllegalArgumentException if
[n] is negative.\n * \n * @sample samples.text.Strings.take\n */\npublic fun String.take(n: Int): String {\n    require(n
>= 0) { "Requested character count $n is less than zero." }\n    return substring(0,
n.coerceAtMost(length))\n}\n\n/**\n * Returns a subsequence of this char sequence containing the last [n]
characters from this char sequence, or the entire char sequence if this char sequence is shorter.\n * \n * @throws
IllegalArgumentException if [n] is negative.\n * \n * @sample samples.text.Strings.take\n */\npublic fun
CharSequence.takeLast(n: Int): CharSequence {\n    require(n >= 0) { "Requested character count $n is less than
zero." }\n    val length = length\n    return subSequence(length - n.coerceAtMost(length), length)\n}\n\n/**\n
* Returns a string containing the last [n] characters from this string, or the entire string if this string is shorter.\n
* \n * @throws IllegalArgumentException if [n] is negative.\n * \n * @sample samples.text.Strings.take\n */\npublic fun
String.takeLast(n: Int): String {\n    require(n >= 0) { "Requested character count $n is less than zero." }\n    val
length = length\n    return substring(length - n.coerceAtMost(length))\n}\n\n/**\n * Returns a subsequence of this
char sequence containing last characters that satisfy the given [predicate].\n * \n * @sample
samples.text.Strings.take\n */\npublic inline fun CharSequence.takeLastWhile(predicate: (Char) -> Boolean):
CharSequence {\n    for (index in lastIndex downTo 0) {\n        if (!predicate(this[index])) {\n            return
subSequence(index + 1, length)\n        }\n    }\n    return subSequence(0, length)\n}\n\n/**\n * Returns a string
containing last characters that satisfy the given [predicate].\n * \n * @sample samples.text.Strings.take\n */\npublic
inline fun String.takeLastWhile(predicate: (Char) -> Boolean): String {\n    for (index in lastIndex downTo 0) {\n
if (!predicate(this[index])) {\n        return substring(index + 1)\n    }\n    return this\n}\n\n/**\n * Returns
a subsequence of this char sequence containing the first characters that satisfy the given [predicate].\n * \n *
@sample samples.text.Strings.take\n */\npublic inline fun CharSequence.takeWhile(predicate: (Char) -> Boolean):
CharSequence {\n    for (index in 0 until length)\n        if (!predicate(get(index))) {\n            return
subSequence(0, index)\n        }\n    return subSequence(0, length)\n}\n\n/**\n * Returns a string containing the first
characters that satisfy the given [predicate].\n * \n * @sample samples.text.Strings.take\n */\npublic inline fun
String.takeWhile(predicate: (Char) -> Boolean): String {\n    for (index in 0 until length)\n        if
(!predicate(get(index))) {\n            return substring(0, index)\n        }\n    return this\n}\n\n/**\n * Returns
a char sequence with characters in reversed order.\n */\npublic fun CharSequence.reversed(): CharSequence {\n    return
StringBuilder(this).reverse()\n}\n\n/**\n * Returns a string with characters in reversed order.\n */\n\n@kotlin.internal.InlineOnly\npublic inline fun String.reversed(): String {\n    return (this as
CharSequence).reversed().toString()\n}\n\n/**\n * Returns a [Map] containing key-value pairs provided by
[transform] function\n * applied to characters of the given char sequence.\n * \n * If any of two pairs would have the
same key the last one gets added to the map.\n * \n * The returned map preserves the entry iteration order of the

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original char sequence.\n * \n * @sample samples.text.Strings.associate\n * \n\npublic inline fun <K, V>
CharSequence.associate(transform: (Char) -> Pair<K, V>): Map<K, V> {\n    val capacity =
mapCapacity(length).coerceAtLeast(16)\n    return associateTo(LinkedHashMap<K, V>(capacity),
transform)\n}\n\n/**\n * Returns a [Map] containing the characters from the given char sequence indexed by the
key\n * returned from [keySelector] function applied to each character.\n * \n * If any two characters would have the
same key returned by [keySelector] the last one gets added to the map.\n * \n * The returned map preserves the entry
iteration order of the original char sequence.\n * \n * @sample samples.text.Strings.associateBy\n * \n\npublic inline
fun <K> CharSequence.associateBy(keySelector: (Char) -> K): Map<K, Char> {\n    val capacity =
mapCapacity(length).coerceAtLeast(16)\n    return associateByTo(LinkedHashMap<K, Char>(capacity),
keySelector)\n}\n\n/**\n * Returns a [Map] containing the values provided by [valueTransform] and indexed by
[keySelector] functions applied to characters of the given char sequence.\n * \n * If any two characters would have
the same key returned by [keySelector] the last one gets added to the map.\n * \n * The returned map preserves the
entry iteration order of the original char sequence.\n * \n * @sample
samples.text.Strings.associateByWithValueTransform\n * \n\npublic inline fun <K, V>
CharSequence.associateBy(keySelector: (Char) -> K, valueTransform: (Char) -> V): Map<K, V> {\n    val capacity
= mapCapacity(length).coerceAtLeast(16)\n    return associateByTo(LinkedHashMap<K, V>(capacity),
keySelector, valueTransform)\n}\n\n/**\n * Populates and returns the [destination] mutable map with key-value
pairs,\n * where key is provided by the [keySelector] function applied to each character of the given char sequence\n
* and value is the character itself.\n * \n * If any two characters would have the same key returned by [keySelector]
the last one gets added to the map.\n * \n * @sample samples.text.Strings.associateByTo\n * \n\npublic inline fun <K,
M : MutableMap<in K, in Char>> CharSequence.associateByTo(destination: M, keySelector: (Char) -> K): M {\n
for (element in this) {\n    destination.put(keySelector(element), element)\n    }\n    return destination\n}\n\n/**\n
* Populates and returns the [destination] mutable map with key-value pairs,\n * where key is provided by the
[keySelector] function and\n * and value is provided by the [valueTransform] function applied to characters of the
given char sequence.\n * \n * If any two characters would have the same key returned by [keySelector] the last one
gets added to the map.\n * \n * @sample samples.text.Strings.associateByToWithValueTransform\n * \n\npublic
inline fun <K, V, M : MutableMap<in K, in V>> CharSequence.associateByTo(destination: M, keySelector: (Char)
-> K, valueTransform: (Char) -> V): M {\n    for (element in this) {\n    destination.put(keySelector(element),
valueTransform(element))\n    }\n    return destination\n}\n\n/**\n * Populates and returns the [destination] mutable
map with key-value pairs\n * provided by [transform] function applied to each character of the given char
sequence.\n * \n * If any of two pairs would have the same key the last one gets added to the map.\n * \n * @sample
samples.text.Strings.associateTo\n * \n\npublic inline fun <K, V, M : MutableMap<in K, in V>>
CharSequence.associateTo(destination: M, transform: (Char) -> Pair<K, V>): M {\n    for (element in this) {\n
destination += transform(element)\n    }\n    return destination\n}\n\n/**\n * Returns a [Map] where keys are
characters from the given char sequence and values are\n * produced by the [valueSelector] function applied to each
character.\n * \n * If any two characters are equal, the last one gets added to the map.\n * \n * The returned map
preserves the entry iteration order of the original char sequence.\n * \n * @sample
samples.text.Strings.associateWith\n * \n\n@SinceKotlin("1.3")\npublic inline fun <V>
CharSequence.associateWith(valueSelector: (Char) -> V): Map<Char, V> {\n    val result = LinkedHashMap<Char,
V>(mapCapacity(length).coerceAtLeast(16))\n    return associateWithTo(result, valueSelector)\n}\n\n/**\n *
Populates and returns the [destination] mutable map with key-value pairs for each character of the given char
sequence,\n * where key is the character itself and value is provided by the [valueSelector] function applied to that
key.\n * \n * If any two characters are equal, the last one overwrites the former value in the map.\n * \n * @sample
samples.text.Strings.associateWithTo\n * \n\n@SinceKotlin("1.3")\npublic inline fun <V, M : MutableMap<in Char,
in V>> CharSequence.associateWithTo(destination: M, valueSelector: (Char) -> V): M {\n    for (element in this)
{\n    destination.put(element, valueSelector(element))\n    }\n    return destination\n}\n\n/**\n * Appends all
characters to the given [destination] collection.\n * \n\npublic fun <C : MutableCollection<in Char>>
CharSequence.toCollection(destination: C): C {\n    for (item in this) {\n    destination.add(item)\n    }\n    return

```



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destination\n}\n\n/**\n * Returns a [HashSet] of all characters.\n *\npublic fun CharSequence.toHashSet():
HashSet<Char> {\n    return toCollection(HashSet<Char>(mapCapacity(length)))\n}\n\n/**\n * Returns a [List]
containing all characters.\n *\npublic fun CharSequence.toList(): List<Char> {\n    return when (length) {\n        0 -
> emptyList()\n        1 -> listOf(this[0])\n        else -> this.toMutableList()\n    }\n}\n\n/**\n * Returns a
[MutableList] filled with all characters of this char sequence.\n *\npublic fun CharSequence.toMutableList():
MutableList<Char> {\n    return toCollection(ArrayList<Char>(length))\n}\n\n/**\n * Returns a [Set] of all
characters.\n *\n * The returned set preserves the element iteration order of the original char sequence.\n *\npublic
fun CharSequence.toSet(): Set<Char> {\n    return when (length) {\n        0 -> emptySet()\n        1 -> setOf(this[0])\n
        else -> toCollection(LinkedHashSet<Char>(mapCapacity(length)))\n    }\n}\n\n/**\n * Returns a single list of all
elements yielded from results of [transform] function being invoked on each character of original char sequence.\n *\n *
@sample samples.collections.Collections.Transformations.flatMap\n *\npublic inline fun <R>
CharSequence.flatMap(transform: (Char) -> Iterable<R>): List<R> {\n    return flatMapTo(ArrayList<R>(),
transform)\n}\n\n/**\n * Appends all elements yielded from results of [transform] function being invoked on each
character of original char sequence, to the given [destination].\n *\npublic inline fun <R, C : MutableCollection<in
R>> CharSequence.flatMapTo(destination: C, transform: (Char) -> Iterable<R>): C {\n    for (element in this) {\n
        val list = transform(element)\n        destination.addAll(list)\n    }\n    return destination\n}\n\n/**\n * Groups
characters of the original char sequence by the key returned by the given [keySelector] function\n * applied to each
character and returns a map where each group key is associated with a list of corresponding characters.\n *\n * The
returned map preserves the entry iteration order of the keys produced from the original char sequence.\n *\n *
@sample samples.collections.Collections.Transformations.groupBy\n *\npublic inline fun <K>
CharSequence.groupBy(keySelector: (Char) -> K): Map<K, List<Char>> {\n    return
groupByTo(LinkedHashMap<K, MutableList<Char>>(), keySelector)\n}\n\n/**\n * Groups values returned by the
[valueTransform] function applied to each character of the original char sequence\n * by the key returned by the
given [keySelector] function applied to the character\n * and returns a map where each group key is associated with
a list of corresponding values.\n *\n * The returned map preserves the entry iteration order of the keys produced
from the original char sequence.\n *\n * @sample
samples.collections.Collections.Transformations.groupByKeysAndValues\n *\npublic inline fun <K, V>
CharSequence.groupBy(keySelector: (Char) -> K, valueTransform: (Char) -> V): Map<K, List<V>> {\n    return
groupByTo(LinkedHashMap<K, MutableList<V>>(), keySelector, valueTransform)\n}\n\n/**\n * Groups
characters of the original char sequence by the key returned by the given [keySelector] function\n * applied to each
character and puts to the [destination] map each group key associated with a list of corresponding characters.\n *\n *
@return The [destination] map.\n *\n * @sample samples.collections.Collections.Transformations.groupBy\n
*\npublic inline fun <K, M : MutableMap<in K, MutableList<Char>>> CharSequence.groupByTo(destination: M,
keySelector: (Char) -> K): M {\n    for (element in this) {\n        val key = keySelector(element)\n        val list =
destination.getOrPut(key) { ArrayList<Char>() }\n        list.add(element)\n    }\n    return destination\n}\n\n/**\n * Groups values returned by the [valueTransform] function applied to each character of the original char sequence\n *
by the key returned by the given [keySelector] function applied to the character\n * and puts to the [destination] map
each group key associated with a list of corresponding values.\n *\n * @return The [destination] map.\n *\n *
@sample samples.collections.Collections.Transformations.groupByKeysAndValues\n *\npublic inline fun <K, V,
M : MutableMap<in K, MutableList<V>>> CharSequence.groupByTo(destination: M, keySelector: (Char) -> K,
valueTransform: (Char) -> V): M {\n    for (element in this) {\n        val key = keySelector(element)\n        val list =
destination.getOrPut(key) { ArrayList<V>() }\n        list.add(valueTransform(element))\n    }\n    return
destination\n}\n\n/**\n * Creates a [Grouping] source from a char sequence to be used later with one of group-and-
fold operations\n * using the specified [keySelector] function to extract a key from each character.\n *\n * @sample
samples.collections.Grouping.groupingByEachCount\n *\n@SinceKotlin("1.1")\npublic inline fun <K>
CharSequence.groupingBy(crossinline keySelector: (Char) -> K): Grouping<Char, K> {\n    return object :
Grouping<Char, K> {\n        override fun sourceIterator(): Iterator<Char> = this@groupingBy.iterator()\n
        override fun keyOf(element: Char): K = keySelector(element)\n    }\n}\n\n/**\n * Returns a list containing the

```

results of applying the given [transform] function\n \* to each character in the original char sequence.\n \* \n \*  
@sample samples.text.Strings.map\n \*^\npublic inline fun <R> CharSequence.map(transform: (Char) -> R):  
List<R> {\n return mapTo(ArrayList<R>(length), transform)\n}\n\n/\*\*\n \* Returns a list containing the results of  
applying the given [transform] function\n \* to each character and its index in the original char sequence.\n \*  
@param [transform] function that takes the index of a character and the character itself\n \* and returns the result of  
the transform applied to the character.\n \*^\npublic inline fun <R> CharSequence.mapIndexed(transform: (index:  
Int, Char) -> R): List<R> {\n return mapIndexedTo(ArrayList<R>(length), transform)\n}\n\n/\*\*\n \* Returns a list  
containing only the non-null results of applying the given [transform] function\n \* to each character and its index in  
the original char sequence.\n \* @param [transform] function that takes the index of a character and the character  
itself\n \* and returns the result of the transform applied to the character.\n \*^\npublic inline fun <R : Any>  
CharSequence.mapIndexedNotNull(transform: (index: Int, Char) -> R?): List<R> {\n return  
mapIndexedNotNullTo(ArrayList<R>(), transform)\n}\n\n/\*\*\n \* Applies the given [transform] function to each  
character and its index in the original char sequence\n \* and appends only the non-null results to the given  
[destination].\n \* @param [transform] function that takes the index of a character and the character itself\n \* and  
returns the result of the transform applied to the character.\n \*^\npublic inline fun <R : Any, C :  
MutableCollection<in R>> CharSequence.mapIndexedNotNullTo(destination: C, transform: (index: Int, Char) ->  
R?): C {\n forEachIndexed { index, element -> transform(index, element)?.let { destination.add(it) } }\n return  
destination\n}\n\n/\*\*\n \* Applies the given [transform] function to each character and its index in the original char  
sequence\n \* and appends the results to the given [destination].\n \* @param [transform] function that takes the  
index of a character and the character itself\n \* and returns the result of the transform applied to the character.\n \*^\n  
\*^\npublic inline fun <R, C : MutableCollection<in R>> CharSequence.mapIndexedTo(destination: C, transform:  
(index: Int, Char) -> R): C {\n var index = 0\n for (item in this)\n destination.add(transform(index++,  
item))\n return destination\n}\n\n/\*\*\n \* Returns a list containing only the non-null results of applying the given  
[transform] function\n \* to each character in the original char sequence.\n \*^\npublic inline fun <R : Any>  
CharSequence.mapNotNull(transform: (Char) -> R?): List<R> {\n return mapNotNullTo(ArrayList<R>(),  
transform)\n}\n\n/\*\*\n \* Applies the given [transform] function to each character in the original char sequence\n \*  
and appends only the non-null results to the given [destination].\n \*^\npublic inline fun <R : Any, C :  
MutableCollection<in R>> CharSequence.mapNotNullTo(destination: C, transform: (Char) -> R?): C {\n forEach  
{ element -> transform(element)?.let { destination.add(it) } }\n return destination\n}\n\n/\*\*\n \* Applies the given  
[transform] function to each character of the original char sequence\n \* and appends the results to the given  
[destination].\n \*^\npublic inline fun <R, C : MutableCollection<in R>> CharSequence.mapTo(destination: C,  
transform: (Char) -> R): C {\n for (item in this)\n destination.add(transform(item))\n return  
destination\n}\n\n/\*\*\n \* Returns a lazy [Iterable] that wraps each character of the original char sequence\n \* into an  
[IndexValue] containing the index of that character and the character itself.\n \*^\npublic fun  
CharSequence.withIndex(): Iterable<IndexedValue<Char>> {\n return IndexingIterable { iterator() }\n}\n\n/\*\*\n \*  
Returns `true` if all characters match the given [predicate].\n \* \n \* @sample  
samples.collections.Collections.Aggregates.all\n \*^\npublic inline fun CharSequence.all(predicate: (Char) ->  
Boolean): Boolean {\n for (element in this) if (!predicate(element)) return false\n return true\n}\n\n/\*\*\n \*  
Returns `true` if char sequence has at least one character.\n \* \n \* @sample  
samples.collections.Collections.Aggregates.any\n \*^\npublic fun CharSequence.any(): Boolean {\n return  
!isEmpty()\n}\n\n/\*\*\n \* Returns `true` if at least one character matches the given [predicate].\n \* \n \* @sample  
samples.collections.Collections.Aggregates.anyWithPredicate\n \*^\npublic inline fun CharSequence.any(predicate:  
(Char) -> Boolean): Boolean {\n for (element in this) if (predicate(element)) return true\n return  
false\n}\n\n/\*\*\n \* Returns the length of this char sequence.\n \*^\n@kotlin.internal.InlineOnly\npublic inline fun  
CharSequence.count(): Int {\n return length\n}\n\n/\*\*\n \* Returns the number of characters matching the given  
[predicate].\n \*^\npublic inline fun CharSequence.count(predicate: (Char) -> Boolean): Int {\n var count = 0\n  
for (element in this) if (predicate(element)) ++count\n return count\n}\n\n/\*\*\n \* Accumulates value starting with  
[initial] value and applying [operation] from left to right to current accumulator value and each character.\n \*  
\n

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*public inline fun <R> CharSequence.fold(initial: R, operation: (acc: R, Char) -> R): R {
    var accumulator = initial
    for (element in this) accumulator = operation(accumulator, element)
    return accumulator
}

* Accumulates value starting with [initial] value and applying [operation] from left to right
* to current accumulator value and each character with its index in the original char sequence.
* @param [operation] function that takes the index of a character, current accumulator value
* and the character itself, and calculates the next accumulator value.

*public inline fun <R> CharSequence.foldIndexed(initial: R, operation: (index: Int, acc: R, Char) -> R):
R {
    var index = 0
    var accumulator = initial
    for (element in this) accumulator = operation(index++, accumulator, element)
    return accumulator
}

* Accumulates value starting with [initial] value and applying [operation] from right to left to each character and current accumulator value.

*public inline fun <R> CharSequence.foldRight(initial: R, operation: (Char, acc: R) -> R): R {
    var index = lastIndex
    var accumulator = initial
    while (index >= 0) {
        accumulator = operation(get(index--), accumulator)
    }
    return accumulator
}

* Accumulates value starting with [initial] value and applying [operation] from right to left
* to each character with its index in the original char sequence and current accumulator value.
* @param [operation] function that takes the index of a character, the character itself
* and current accumulator value, and calculates the next accumulator value.

*public inline fun <R> CharSequence.foldRightIndexed(initial: R, operation: (index: Int, Char, acc: R) -> R): R {
    var index = lastIndex
    var accumulator = initial
    while (index >= 0) {
        accumulator = operation(index, get(index), accumulator)
        --index
    }
    return accumulator
}

* Performs the given [action] on each character.

*public inline fun CharSequence.forEach(action: (Char) -> Unit): Unit {
    for (element in this) action(element)
}

* Performs the given [action] on each character, providing sequential index with the character.
* @param [action] function that takes the index of a character and the character itself
* and performs the desired action on the character.

*public inline fun CharSequence.forEachIndexed(action: (index: Int, Char) -> Unit): Unit {
    var index = 0
    for (item in this) action(index++, item)
}

* Returns the largest character or `null` if there are no characters.

*public fun CharSequence.max(): Char? {
    if (isEmpty()) return null
    var max = this[0]
    for (i in 1..lastIndex) {
        val e = this[i]
        if (max < e) max = e
    }
    return max
}

* Returns the first character yielding the largest value of the given function or `null` if there are no characters.
* @sample samples.collections.Collections.Aggregates.maxBy

*public inline fun <R : Comparable<R>> CharSequence.maxBy(selector: (Char) -> R): Char? {
    if (isEmpty()) return null
    var maxElem = this[0]
    val lastIndex = this.lastIndex
    if (lastIndex == 0) return maxElem
    var maxValue = selector(maxElem)
    for (i in 1..lastIndex) {
        val e = this[i]
        val v = selector(e)
        if (maxValue < v) {
            maxElem = e
            maxValue = v
        }
    }
    return maxElem
}

* Returns the first character having the largest value according to the provided [comparator] or `null` if there are no characters.

*public fun CharSequence.maxWith(comparator: Comparator<in Char>): Char? {
    if (isEmpty()) return null
    var max = this[0]
    for (i in 1..lastIndex) {
        val e = this[i]
        if (comparator.compare(max, e) < 0) max = e
    }
    return max
}

* Returns the smallest character or `null` if there are no characters.

*public fun CharSequence.min(): Char? {
    if (isEmpty()) return null
    var min = this[0]
    for (i in 1..lastIndex) {
        val e = this[i]
        if (min > e) min = e
    }
    return min
}

* Returns the first character yielding the smallest value of the given function or `null` if there are no characters.
* @sample samples.collections.Collections.Aggregates.minBy

*public inline fun <R : Comparable<R>> CharSequence.minBy(selector: (Char) -> R): Char? {
    if (isEmpty()) return null
    var minElem = this[0]
    val lastIndex = this.lastIndex
    if (lastIndex == 0) return minElem
    var minValue = selector(minElem)
    for (i in 1..lastIndex) {
        val e = this[i]
        val v = selector(e)
        if (minValue > v) {
            minElem = e
            minValue = v
        }
    }
    return minElem
}

* Returns the first character having the smallest value according to the provided [comparator] or `null` if there are no characters.

*public fun CharSequence.minWith(comparator: Comparator<in Char>): Char? {
    if (isEmpty()) return null
    var min = this[0]
    for (i in 1..lastIndex) {
        val e = this[i]
        if (comparator.compare(min, e) > 0) min = e
    }
    return min
}

* Returns `true` if the char sequence has no characters.
* @sample samples.collections.Collections.Aggregates.none

*public fun CharSequence.none(): Boolean {
    return
}

```

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isEmpty()\n\n/**\n * Returns `true` if no characters match the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.noneWithPredicate\n */\npublic inline fun
CharSequence.none(predicate: (Char) -> Boolean): Boolean {\n    for (element in this) if (predicate(element)) return
false\n    return true\n}\n\n/**\n * Performs the given [action] on each character and returns the char sequence itself
afterwards.\n */\n@SinceKotlin("1.1")\npublic inline fun <S : CharSequence> S.onEach(action: (Char) -> Unit): S
{\n    return apply { for (element in this) action(element) }\n}\n\n/**\n * Accumulates value starting with the first
character and applying [operation] from left to right to current accumulator value and each character.\n * \n *
@sample samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun
CharSequence.reduce(operation: (acc: Char, Char) -> Char): Char {\n    if (isEmpty())\n        throw
UnsupportedOperationException("Empty char sequence can't be reduced.")\n    var accumulator = this[0]\n    for
(index in 1..lastIndex) {\n        accumulator = operation(accumulator, this[index])\n    }\n    return
accumulator\n}\n\n/**\n * Accumulates value starting with the first character and applying [operation] from left to
right\n * to current accumulator value and each character with its index in the original char sequence.\n * @param
[operation] function that takes the index of a character, current accumulator value\n * and the character itself and
calculates the next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun CharSequence.reduceIndexed(operation: (index: Int, acc: Char, Char) -> Char): Char {\n    if
(isEmpty())\n        throw UnsupportedOperationException("Empty char sequence can't be reduced.")\n    var
accumulator = this[0]\n    for (index in 1..lastIndex) {\n        accumulator = operation(index, accumulator,
this[index])\n    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting with the first character and
applying [operation] from left to right to current accumulator value and each character. Returns null if the char
sequence is empty.\n * \n * @sample samples.collections.Collections.Aggregates.reduceOrNull\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun CharSequence.reduceOrNull(operation:
(acc: Char, Char) -> Char): Char? {\n    if (isEmpty())\n        return null\n    var accumulator = this[0]\n    for
(index in 1..lastIndex) {\n        accumulator = operation(accumulator, this[index])\n    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting with last character and applying [operation] from right to left to each character and
current accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduceRight\n */\npublic
inline fun CharSequence.reduceRight(operation: (Char, acc: Char) -> Char): Char {\n    var index = lastIndex\n    if
(index < 0) throw UnsupportedOperationException("Empty char sequence can't be reduced.")\n    var accumulator
= get(index--)\n    while (index >= 0) {\n        accumulator = operation(get(index--), accumulator)\n    }\n    return
accumulator\n}\n\n/**\n * Accumulates value starting with last character and applying [operation] from right to
left\n * to each character with its index in the original char sequence and current accumulator value.\n * @param
[operation] function that takes the index of a character, the character itself\n * and current accumulator value, and
calculates the next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduceRight\n */\npublic inline fun CharSequence.reduceRightIndexed(operation: (index: Int, Char, acc: Char) -> Char): Char {\n    var
index = lastIndex\n    if (index < 0) throw UnsupportedOperationException("Empty char sequence can't be
reduced.")\n    var accumulator = get(index--)\n    while (index >= 0) {\n        accumulator = operation(index,
get(index), accumulator)\n        --index\n    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting
with last character and applying [operation] from right to left to each character and current accumulator value. Returns
null if the char sequence is empty.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRightOrNull\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun
CharSequence.reduceRightOrNull(operation: (Char, acc: Char) -> Char): Char? {\n    var index = lastIndex\n    if
(index < 0) return null\n    var accumulator = get(index--)\n    while (index >= 0) {\n        accumulator =
operation(get(index--), accumulator)\n    }\n    return accumulator\n}\n\n/**\n * Returns a list containing successive
accumulation values generated by applying [operation] from left to right\n * to each character and current
accumulator value that starts with [initial] value.\n * \n * Note that `acc` value passed to [operation] function should
not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n * @param [operation]
function that takes current accumulator value and a character, and calculates the next accumulator value.\n * \n *

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@sample samples.collections.Collections.Aggregates.scan
*/n@SinceKotlin("1.3")n@ExperimentalStdlibApi\npublic inline fun <R> CharSequence.scan(initial: R,
operation: (acc: R, Char) -> R): List<R> {n if (isEmpty()) return listOf(initial)n val result =
ArrayList<R>(length + 1).apply { add(initial) }n var accumulator = initialn for (element in this) {n
accumulator = operation(accumulator, element)n result.add(accumulator)n }n return result\n}n/n/**n *
Returns a list containing successive accumulation values generated by applying [operation] from left to right\n *
to each character, its index in the original char sequence and current accumulator value that starts with [initial] value.\n
*/n * Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would affect the
previous value in resulting list.\n * \n * @param [operation] function that takes the index of a character, current
accumulator value\n * and the character itself, and calculates the next accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.scan\n */n@SinceKotlin("1.3")n@ExperimentalStdlibApi\npublic
inline fun <R> CharSequence.scanIndexed(initial: R, operation: (index: Int, acc: R, Char) -> R): List<R> {n if
(isEmpty()) return listOf(initial)n val result = ArrayList<R>(length + 1).apply { add(initial) }n var accumulator
= initialn for (index in indices) {n accumulator = operation(index, accumulator, this[index])n
result.add(accumulator)n }n return result\n}n/n/**n * Returns a list containing successive accumulation
values generated by applying [operation] from left to right\n * to each character and current accumulator value that
starts with the first character of this char sequence.\n * \n * Note that `acc` value passed to [operation] function
should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n * @param [operation]
function that takes current accumulator value and a character, and calculates the next accumulator value.\n * \n *
@sample samples.collections.Collections.Aggregates.scanReduce
*/n@SinceKotlin("1.3")n@ExperimentalStdlibApi\npublic inline fun CharSequence.scanReduce(operation: (acc:
Char, Char) -> Char): List<Char> {n if (isEmpty()) return emptyList()\n var accumulator = this[0]\n val result
= ArrayList<Char>(length).apply { add(accumulator) }n for (index in 1 until length) {n accumulator =
operation(accumulator, this[index])n result.add(accumulator)n }n return result\n}n/n/**n * Returns a list
containing successive accumulation values generated by applying [operation] from left to right\n * to each character,
its index in the original char sequence and current accumulator value that starts with the first character of this char
sequence.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would
affect the previous value in resulting list.\n * \n * @param [operation] function that takes the index of a character,
current accumulator value\n * and the character itself, and calculates the next accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.scanReduce\n */n@SinceKotlin("1.3")n@ExperimentalStdlibApi\npublic inline fun
CharSequence.scanReduceIndexed(operation: (index: Int, acc: Char, Char) -> Char): List<Char> {n if
(isEmpty()) return emptyList()\n var accumulator = this[0]\n val result = ArrayList<Char>(length).apply {
add(accumulator) }n for (index in 1 until length) {n accumulator = operation(index, accumulator,
this[index])n result.add(accumulator)n }n return result\n}n/n/**n * Returns the sum of all values
produced by [selector] function applied to each character in the char sequence.\n */npublic inline fun
CharSequence.sumBy(selector: (Char) -> Int): Int {n var sum: Int = 0\n for (element in this) {n sum +=
selector(element)n }n return sum\n}n/n/**n * Returns the sum of all values produced by [selector] function
applied to each character in the char sequence.\n */npublic inline fun CharSequence.sumByDouble(selector: (Char)
-> Double): Double {n var sum: Double = 0.0\n for (element in this) {n sum += selector(element)n }n
return sum\n}n/n/**n * Splits this char sequence into a list of strings each not exceeding the given [size].\n * \n *
The last string in the resulting list may have less characters than the given [size].\n * \n * @param size the number
of elements to take in each string, must be positive and can be greater than the number of elements in this char
sequence.\n * \n * @sample samples.collections.Collections.Transformations.chunked\n */n@SinceKotlin("1.2")\npublic fun CharSequence.chunked(size: Int): List<String> {n return windowed(size,
size, partialWindows = true)\n}n/n/**n * Splits this char sequence into several char sequences each not exceeding
the given [size]\n * and applies the given [transform] function to an each.\n * \n * @return list of results of the
[transform] applied to an each char sequence.\n * \n * Note that the char sequence passed to the [transform] function

```

is ephemeral and is valid only inside that function. You should not store it or allow it to escape in some way, unless you made a snapshot of it. The last char sequence may have less characters than the given [size].

`@param size` the number of elements to take in each char sequence, must be positive and can be greater than the number of elements in this char sequence.

`@sample samples.text.Strings.chunkedTransform`

```

*^@SinceKotlin("1.2")
public fun <R> CharSequence.chunked(size: Int, transform: (CharSequence) -> R):
List<R> {
    return windowed(size, size, partialWindows = true, transform = transform)
}

```

Splits this char sequence into a sequence of strings each not exceeding the given [size]. The last string in the resulting sequence may have less characters than the given [size].

`@param size` the number of elements to take in each string, must be positive and can be greater than the number of elements in this char sequence.

`@sample samples.collections.Collections.Transformations.chunked`

```

*^@SinceKotlin("1.2")
public fun
CharSequence.chunkedSequence(size: Int): Sequence<String> {
    return chunkedSequence(size) { it.toString()
}
}

```

Splits this char sequence into several char sequences each not exceeding the given [size] and applies the given [transform] function to an each.

`@return` sequence of results of the [transform] applied to an each char sequence.

Note that the char sequence passed to the [transform] function is ephemeral and is valid only inside that function. You should not store it or allow it to escape in some way, unless you made a snapshot of it. The last char sequence may have less characters than the given [size].

`@param size` the number of elements to take in each char sequence, must be positive and can be greater than the number of elements in this char sequence.

`@sample samples.text.Strings.chunkedTransformToSequence`

```

*^@SinceKotlin("1.2")
public fun <R> CharSequence.chunkedSequence(size: Int, transform: (CharSequence) -
> R): Sequence<R> {
    return windowedSequence(size, size, partialWindows = true, transform =
transform)
}

```

Splits the original char sequence into pair of char sequences, where `*first*` char sequence contains characters for which [predicate] yielded `true``, while `*second*` char sequence contains characters for which [predicate] yielded `false``.

```

public inline fun CharSequence.partition(predicate: (Char) ->
Boolean): Pair<CharSequence, CharSequence> {
    val first = StringBuilder()
    val second = StringBuilder()
    for (element in this) {
        if (predicate(element)) {
            first.append(element)
        } else {
            second.append(element)
        }
    }
    return Pair(first, second)
}

```

Splits the original string into pair of strings, where `*first*` string contains characters for which [predicate] yielded `true``, while `*second*` string contains characters for which [predicate] yielded `false``.

```

public inline fun String.partition(predicate: (Char) ->
Boolean): Pair<String, String> {
    val first = StringBuilder()
    val second = StringBuilder()
    for (element in
this) {
        if (predicate(element)) {
            first.append(element)
        } else {
            second.append(element)
        }
    }
    return Pair(first.toString(), second.toString())
}

```

Returns a list of snapshots of the window of the given [size] sliding along this char sequence with the given [step], where each snapshot is a string.

Several last strings may have less characters than the given [size].

Both [size] and [step] must be positive and can be greater than the number of elements in this char sequence.

`@param size` the number of elements to take in each window

`@param step` the number of elements to move the window forward by on an each step, by default 1

`@param partialWindows` controls whether or not to keep partial windows in the end if any, by default `false`` which means partial windows won't be preserved

`@sample samples.collections.Sequences.Transformations.takeWindows`

```

*^@SinceKotlin("1.2")
public fun
CharSequence.windowed(size: Int, step: Int = 1, partialWindows: Boolean = false): List<String> {
    return
windowed(size, step, partialWindows) { it.toString() }
}

```

Returns a list of results of applying the given [transform] function to an each char sequence representing a view over the window of the given [size] sliding along this char sequence with the given [step].

Note that the char sequence passed to the [transform] function is ephemeral and is valid only inside that function. You should not store it or allow it to escape in some way, unless you made a snapshot of it. Several last char sequences may have less characters than the given [size].

Both [size] and [step] must be positive and can be greater than the number of elements in this char sequence.

`@param size` the number of elements to take in each window

`@param step` the number of elements to move the window forward by on an each step, by default 1

`@param partialWindows` controls whether or not to keep partial windows in the end if any, by default `false`` which means partial windows won't

be preserved

```

@sample samples.collections.Sequences.Transformations.averageWindows
*/
@SinceKotlin("1.2")
public fun <R> CharSequence.windowed(size: Int, step: Int = 1, partialWindows:
Boolean = false, transform: (CharSequence) -> R): List<R> {
    checkWindowSizeStep(size, step)
    val thisSize = this.length
    val resultCapacity = thisSize / step + if (thisSize % step == 0) 0 else 1
    val result = ArrayList<R>(resultCapacity)
    var index = 0
    while (index in 0 until thisSize) {
        val end = index + size
        val coercedEnd = if (end < 0 || end > thisSize) { if (partialWindows) thisSize else break } else end
        result.add(transform(subSequence(index, coercedEnd)))
        index += step
    }
    return result
}

```

Returns a sequence of snapshots of the window of the given [size] sliding along this char sequence with the given [step], where each snapshot is a string. Several last strings may have less characters than the given [size]. Both [size] and [step] must be positive and can be greater than the number of elements in this char sequence. @param size the number of elements to take in each window @param step the number of elements to move the window forward by on an each step, by default 1 @param partialWindows controls whether or not to keep partial windows in the end if any, by default `false` which means partial windows won't be preserved

```

@sample samples.collections.Sequences.Transformations.takeWindows
*/
@SinceKotlin("1.2")
public fun CharSequence.windowedSequence(size: Int, step: Int = 1, partialWindows:
Boolean = false): Sequence<String> {
    return windowedSequence(size, step, partialWindows) { it.toString() }
}

```

Returns a sequence of results of applying the given [transform] function to an each char sequence representing a view over the window of the given [size] sliding along this char sequence with the given [step]. Note that the char sequence passed to the [transform] function is ephemeral and is valid only inside that function. You should not store it or allow it to escape in some way, unless you made a snapshot of it. Several last char sequences may have less characters than the given [size]. Both [size] and [step] must be positive and can be greater than the number of elements in this char sequence. @param size the number of elements to take in each window @param step the number of elements to move the window forward by on an each step, by default 1 @param partialWindows controls whether or not to keep partial windows in the end if any, by default `false` which means partial windows won't be preserved

```

@sample samples.collections.Sequences.Transformations.averageWindows
*/
@SinceKotlin("1.2")
public fun <R> CharSequence.windowedSequence(size: Int, step: Int = 1, partialWindows: Boolean = false, transform:
(CharSequence) -> R): Sequence<R> {
    checkWindowSizeStep(size, step)
    val windows = (if (partialWindows) indices else 0 until length - size + 1) step step
    return windows.asSequence().map { index ->
        val end = index + size
        val coercedEnd = if (end < 0 || end > length) length else end
        transform(subSequence(index, coercedEnd))
    }
}

```

Returns a list of pairs built from the characters of `this` and the [other] char sequences with the same index. The returned list has length of the shortest char sequence.

```

@sample samples.text.Strings.zip
*/
public infix fun CharSequence.zip(other: CharSequence):
List<Pair<Char, Char>> {
    return zip(other) { c1, c2 -> c1 to c2 }
}

```

Returns a list of values built from the characters of `this` and the [other] char sequences with the same index using the provided [transform] function applied to each pair of characters. The returned list has length of the shortest char sequence.

```

@sample samples.text.Strings.zipWithTransform
*/
public inline fun <V> CharSequence.zip(other:
CharSequence, transform: (a: Char, b: Char) -> V): List<V> {
    val length = minOf(this.length, other.length)
    val list = ArrayList<V>(length)
    for (i in 0 until length) {
        list.add(transform(this[i], other[i]))
    }
    return list
}

```

Returns a list of pairs of each two adjacent characters in this char sequence. The returned list is empty if this char sequence contains less than two characters.

```

@sample samples.collections.Collections.Transformations.zipWithNext
*/
@SinceKotlin("1.2")
public fun CharSequence.zipWithNext(): List<Pair<Char, Char>> {
    return zipWithNext { a, b -> a to b }
}

```

Returns a list containing the results of applying the given [transform] function to an each pair of two adjacent characters in this char sequence. The returned list is empty if this char sequence contains less than two characters.

```

@sample samples.collections.Collections.Transformations.zipWithNextToFindDeltas
*/
@SinceKotlin("1.2")
public inline fun <R> CharSequence.zipWithNext(transform: (a: Char, b: Char) -> R):
List<R> {
    val size = length - 1
    if (size < 1) return emptyList()
    val result = ArrayList<R>(size)
    for

```





```

*  

@kotlin.internal.InlineOnly  

public inline fun String.trimEnd(): String = (this as  

CharSequence).trimEnd().toString()  

* Returns a char sequence with content of this char sequence padded at  

the beginning  

* to the specified [length] with the specified character or space.  

* @param length the desired  

string length.  

* @param padChar the character to pad string with, if it has length less than the [length] specified.  

Space is used by default.  

* @return Returns a char sequence of length at least [length] consisting of `this` char  

sequence prepended with [padChar] as many times  

* as are necessary to reach that length.  

* @sample  

samples.text.Strings.padStart  

@kotlin.internal.InlineOnly  

public fun CharSequence.padStart(length: Int, padChar: Char = ' '):  

CharSequence {  

    if (length < 0) throw IllegalArgumentException("Desired length $length is less than  

zero.")  

    if (length <= this.length) return this.subSequence(0, this.length)  

    val sb =  

StringBuilder(length)  

    for (i in 1..(length - this.length)) sb.append(padChar)  

    sb.append(this)  

    return  

sb  

}  

* Pads the string to the specified [length] at the beginning with the specified character or space.  

* @param length the desired string length.  

* @param padChar the character to pad string with, if it has length less  

than the [length] specified. Space is used by default.  

* @return Returns a string of length at least [length]  

consisting of `this` string prepended with [padChar] as many times  

* as are necessary to reach that length.  

* @sample  

samples.text.Strings.padStart  

@kotlin.internal.InlineOnly  

public fun String.padStart(length: Int, padChar: Char = ' '): String =  

(this as CharSequence).padStart(length, padChar).toString()  

* Returns a char sequence with content of this  

char sequence padded at the end  

* to the specified [length] with the specified character or space.  

* @param  

length the desired string length.  

* @param padChar the character to pad string with, if it has length less than the  

[length] specified. Space is used by default.  

* @return Returns a char sequence of length at least [length]  

consisting of `this` char sequence appended with [padChar] as many times  

* as are necessary to reach that  

length.  

* @sample  

samples.text.Strings.padEnd  

@kotlin.internal.InlineOnly  

public fun CharSequence.padEnd(length: Int, padChar: Char  

= ' '): CharSequence {  

    if (length < 0) throw IllegalArgumentException("Desired length $length is less  

than zero.")  

    if (length <= this.length) return this.subSequence(0, this.length)  

    val sb =  

StringBuilder(length)  

    sb.append(this)  

    for (i in 1..(length - this.length)) sb.append(padChar)  

    return  

sb  

}  

* Pads the string to the specified [length] at the end with the specified character or space.  

* @param  

length the desired string length.  

* @param padChar the character to pad string with, if it has length less  

than the [length] specified. Space is used by default.  

* @return Returns a string of length at least [length]  

consisting of `this` string appended with [padChar] as many times  

* as are necessary to reach that length.  

* @sample  

samples.text.Strings.padEnd  

@kotlin.internal.InlineOnly  

public fun String.padEnd(length: Int, padChar: Char = ' '): String =  

(this as CharSequence).padEnd(length, padChar).toString()  

* Returns `true` if this nullable char sequence is  

either `null` or empty.  

* @sample  

samples.text.Strings.stringOrNullEmpty  

@kotlin.internal.InlineOnly  

public inline fun CharSequence?.isNullOrEmpty(): Boolean {  

    contract {  

        returns(false) implies (this@isNullOrEmpty != null)  

    }  

    return this == null || this.length == 0  

}  

* Returns `true` if this char sequence is empty (contains no characters).  

* @sample  

samples.text.Strings.stringIsEmpty  

@kotlin.internal.InlineOnly  

public inline fun CharSequence.isEmpty():  

Boolean = length == 0  

* Returns `true` if this char sequence is not empty.  

* @sample  

samples.text.Strings.stringIsNotEmpty  

@kotlin.internal.InlineOnly  

public inline fun  

CharSequence.isNotEmpty(): Boolean = length > 0  

// implemented differently in JVM and JS  

public fun  

String.isBlank(): Boolean = length() == 0  

all { it.isWhitespace() }  

* Returns `true` if this char sequence  

is not empty and contains some characters except of whitespace characters.  

* @sample  

samples.text.Strings.stringIsNotBlank  

@kotlin.internal.InlineOnly  

public inline fun  

CharSequence.isNotBlank(): Boolean = !isBlank()  

* Returns `true` if this nullable char sequence is either  

`null` or empty or consists solely of whitespace characters.  

* @sample  

samples.text.Strings.stringOrNullBlank  

@kotlin.internal.InlineOnly  

public inline fun  

CharSequence?.isNullOrBlank(): Boolean {  

    contract {  

        returns(false) implies (this@isNullOrBlank !=  

null)  

    }  

    return this == null || this.isBlank()  

}  

* Iterator for characters of the given char sequence.  

@kotlin.internal.InlineOnly  

public operator fun CharSequence.iterator(): CharIterator = object : CharIterator() {  

    private var index = 0  

    public override fun nextChar(): Char = get(index++)  

    public override fun hasNext(): Boolean = index <

```

length\n}\n\n/\*\* Returns the string if it is not `null`, or the empty string otherwise.

\*\n\n@kotlin.internal.InlineOnly\n\npublic inline fun String?.orEmpty(): String = this ?: ""\n\n/\*\*\n\n \* Returns this char sequence if it's not empty\n\n \* or the result of calling [defaultValue] function if the char sequence is empty.\n\n \*\n\n \* @sample samples.text.Strings.stringIfEmpty\n\n

\*\n\n@SinceKotlin("1.3")\n\n@kotlin.internal.InlineOnly\n\npublic inline fun <C, R> C.isEmpty(defaultValue: () -> R): R where C : CharSequence, C : R =\n\n if (isEmpty()) defaultValue() else this\n\n/\*\*\n\n \* Returns this char sequence if it is not empty and doesn't consist solely of whitespace characters,\n\n \* or the result of calling [defaultValue] function otherwise.\n\n \*\n\n \* @sample samples.text.Strings.stringIfBlank\n\n

\*\n\n@SinceKotlin("1.3")\n\n@kotlin.internal.InlineOnly\n\npublic inline fun <C, R> C.isBlank(defaultValue: () -> R): R where C : CharSequence, C : R =\n\n if (isBlank()) defaultValue() else this\n\n/\*\*\n\n \* Returns the range of valid character indices for this char sequence.\n\n \*\n\n \* @public val CharSequence.indices: IntRange\n\n get() = 0..length - 1\n\n/\*\*\n\n \* Returns the index of the last character in the char sequence or -1 if it is empty.\n\n \*\n\n \* @public val CharSequence.lastIndex: Int\n\n get() = this.length - 1\n\n/\*\*\n\n \* Returns `true` if this CharSequence has Unicode surrogate pair at the specified [index].\n\n \*\n\n \* @public fun CharSequence.hasSurrogatePairAt(index: Int): Boolean {\n\n return index in 0..length - 2\n\n && this[index].isHighSurrogate()\n\n && this[index + 1].isLowSurrogate()\n\n}\n\n/\*\*\n\n \* Returns a substring specified by the given [range] of indices.\n\n \*\n\n \* @public fun String.substring(range: IntRange): String = substring(range.start, range.endInclusive + 1)\n\n/\*\*\n\n \* Returns a subsequence of this char sequence specified by the given [range] of indices.\n\n \*\n\n \* @public fun

CharSequence.subSequence(range: IntRange): CharSequence = subSequence(range.start, range.endInclusive + 1)\n\n/\*\*\n\n \* Returns a subsequence of this char sequence.\n\n \*\n\n \* This extension is chosen only for invocation with old-named parameters.\n\n \* Replace parameter names with the same as those of [CharSequence.subSequence].\n\n

\*\n\n@kotlin.internal.InlineOnly\n\n@Suppress("EXTENSION\_SHADOWED\_BY\_MEMBER") // false\n\nwarning\n\n@Deprecated("Use parameters named startIndex and endIndex.", ReplaceWith("subSequence(startIndex = start, endIndex = end)"))\n\npublic inline fun String.subSequence(start: Int, end: Int): CharSequence = subSequence(start, end)\n\n/\*\*\n\n \* Returns a substring of chars from a range of this char sequence starting at the [startIndex] and ending right before the [endIndex].\n\n \*\n\n \* @param startIndex the start index (inclusive).\n\n \*\n\n \* @param endIndex the end index (exclusive). If not specified, the length of the char sequence is used.\n\n

\*\n\n@kotlin.internal.InlineOnly\n\npublic inline fun CharSequence.substring(startIndex: Int, endIndex: Int = length): String = subSequence(startIndex, endIndex).toString()\n\n/\*\*\n\n \* Returns a substring of chars at indices from the specified [range] of this char sequence.\n\n \*\n\n \* @public fun CharSequence.substring(range: IntRange): String = subSequence(range.start, range.endInclusive + 1).toString()\n\n/\*\*\n\n \* Returns a substring before the first occurrence of [delimiter].\n\n \* If the string does not contain the delimiter, returns [missingDelimiterValue] which defaults to the original string.\n\n \*\n\n \* @public fun String.substringBefore(delimiter: Char, missingDelimiterValue: String = this): String {\n\n val index = indexOf(delimiter)\n\n return if (index == -1) missingDelimiterValue else substring(0, index)\n\n}\n\n/\*\*\n\n \* Returns a substring before the first occurrence of [delimiter].\n\n \* If the string does not contain the delimiter, returns [missingDelimiterValue] which defaults to the original string.\n\n \*\n\n \* @public fun

String.substringBefore(delimiter: String, missingDelimiterValue: String = this): String {\n\n val index = indexOf(delimiter)\n\n return if (index == -1) missingDelimiterValue else substring(0, index)\n\n}\n\n/\*\*\n\n \* Returns a substring after the first occurrence of [delimiter].\n\n \* If the string does not contain the delimiter, returns [missingDelimiterValue] which defaults to the original string.\n\n \*\n\n \* @public fun String.substringAfter(delimiter: Char, missingDelimiterValue: String = this): String {\n\n val index = indexOf(delimiter)\n\n return if (index == -1) missingDelimiterValue else substring(index + 1, length)\n\n}\n\n/\*\*\n\n \* Returns a substring after the first occurrence of [delimiter].\n\n \* If the string does not contain the delimiter, returns [missingDelimiterValue] which defaults to the original string.\n\n \*\n\n \* @public fun String.substringAfter(delimiter: String, missingDelimiterValue: String = this): String {\n\n val index = indexOf(delimiter)\n\n return if (index == -1) missingDelimiterValue else substring(index + delimiter.length, length)\n\n}\n\n/\*\*\n\n \* Returns a substring before the last occurrence of [delimiter].\n\n \* If the string does not contain the delimiter, returns [missingDelimiterValue] which defaults to the original string.\n\n \*\n\n \* @public fun

String.substringBeforeLast(delimiter: Char, missingDelimiterValue: String = this): String {\n\n val index =

```

lastIndexOf(delimiter)\n    return if (index == -1) missingDelimiterValue else substring(0, index)\n}\n\n/**\n *
Returns a substring before the last occurrence of [delimiter].\n * If the string does not contain the delimiter, returns
[missingDelimiterValue] which defaults to the original string.\n */\npublic fun String.substringBeforeLast(delimiter:
String, missingDelimiterValue: String = this): String {\n    val index = lastIndexOf(delimiter)\n    return if (index ==
-1) missingDelimiterValue else substring(0, index)\n}\n\n/**\n * Returns a substring after the last occurrence of
[delimiter].\n * If the string does not contain the delimiter, returns [missingDelimiterValue] which defaults to the
original string.\n */\npublic fun String.substringAfterLast(delimiter: Char, missingDelimiterValue: String = this):
String {\n    val index = lastIndexOf(delimiter)\n    return if (index == -1) missingDelimiterValue else
substring(index + 1, length)\n}\n\n/**\n * Returns a substring after the last occurrence of [delimiter].\n * If the
string does not contain the delimiter, returns [missingDelimiterValue] which defaults to the original string.\n */\n
public fun String.substringAfterLast(delimiter: String, missingDelimiterValue: String = this): String {\n    val
index = lastIndexOf(delimiter)\n    return if (index == -1) missingDelimiterValue else substring(index +
delimiter.length, length)\n}\n\n/**\n * Returns a char sequence with content of this char sequence where its part at
the given range\n * is replaced with the [replacement] char sequence.\n * @param startIndex the index of the first
character to be replaced.\n * @param endIndex the index of the first character after the replacement to keep in the
string.\n */\n@UseExperimental(ExperimentalStdlibApi::class)\npublic fun CharSequence.replaceRange(startIndex:
Int, endIndex: Int, replacement: CharSequence): CharSequence {\n    if (endIndex < startIndex)\n        throw
IndexOutOfBoundsException("End index ($endIndex) is less than start index ($startIndex).")\n    val sb =
StringBuilder()\n    sb.appendRange(this, 0, startIndex)\n    sb.append(replacement)\n    sb.appendRange(this,
endIndex, length)\n    return sb\n}\n\n/**\n * Replaces the part of the string at the given range with the
[replacement] char sequence.\n * @param startIndex the index of the first character to be replaced.\n * @param
endIndex the index of the first character after the replacement to keep in the string.\n */\n@kotlin.internal.InlineOnly\npublic inline fun String.replaceRange(startIndex: Int, endIndex: Int, replacement:
CharSequence): String =\n    (this as CharSequence).replaceRange(startIndex, endIndex,
replacement).toString()\n\n/**\n * Returns a char sequence with content of this char sequence where its part at the
given [range]\n * is replaced with the [replacement] char sequence.\n * \n * The end index of the [range] is included
in the part to be replaced.\n */\npublic fun CharSequence.replaceRange(range: IntRange, replacement:
CharSequence): CharSequence =\n    replaceRange(range.start, range.endInclusive + 1, replacement)\n\n/**\n * Replace the part of string at the given [range] with the [replacement] string.\n * \n * The end index of the [range] is
included in the part to be replaced.\n */\n@kotlin.internal.InlineOnly\npublic inline fun String.replaceRange(range:
IntRange, replacement: CharSequence): String =\n    (this as CharSequence).replaceRange(range,
replacement).toString()\n\n/**\n * Returns a char sequence with content of this char sequence where its part at the
given range is removed.\n * \n * @param startIndex the index of the first character to be removed.\n * @param
endIndex the index of the first character after the removed part to keep in the string.\n * \n * [endIndex] is not
included in the removed part.\n */\n@UseExperimental(ExperimentalStdlibApi::class)\npublic fun
CharSequence.removeRange(startIndex: Int, endIndex: Int): CharSequence {\n    if (endIndex < startIndex)\n        throw
IndexOutOfBoundsException("End index ($endIndex) is less than start index ($startIndex).")\n    if
(endIndex == startIndex)\n        return this.subSequence(0, length)\n    val sb = StringBuilder(length - (endIndex -
startIndex))\n    sb.appendRange(this, 0, startIndex)\n    sb.appendRange(this, endIndex, length)\n    return
sb\n}\n\n/**\n * Removes the part of a string at a given range.\n * @param startIndex the index of the first character
to be removed.\n * @param endIndex the index of the first character after the removed part to keep in the string.\n
 * \n * [endIndex] is not included in the removed part.\n */\n@kotlin.internal.InlineOnly\npublic inline fun
String.removeRange(startIndex: Int, endIndex: Int): String =\n    (this as CharSequence).removeRange(startIndex,
endIndex).toString()\n\n/**\n * Returns a char sequence with content of this char sequence where its part at the
given [range] is removed.\n * \n * The end index of the [range] is included in the removed part.\n */\npublic fun
CharSequence.removeRange(range: IntRange): CharSequence = removeRange(range.start, range.endInclusive +
1)\n\n/**\n * Removes the part of a string at the given [range].\n * \n * The end index of the [range] is included in
the removed part.\n */\n@kotlin.internal.InlineOnly\npublic inline fun String.removeRange(range: IntRange): String

```

```

= \n (this as CharSequence).removeRange(range).toString()\n\n/**\n * If this char sequence starts with the given\n [prefix], returns a new char sequence\n * with the prefix removed. Otherwise, returns a new char sequence with the\n same characters.\n */\npublic fun CharSequence.removePrefix(prefix: CharSequence): CharSequence {\n if\n (startsWith(prefix)) {\n return subSequence(prefix.length, length)\n }\n return subSequence(0,\n length)\n}\n\n/**\n * If this string starts with the given [prefix], returns a copy of this string\n * with the prefix\n removed. Otherwise, returns this string.\n */\npublic fun String.removePrefix(prefix: CharSequence): String {\n if\n (startsWith(prefix)) {\n return substring(prefix.length)\n }\n return this\n}\n\n/**\n * If this char sequence\n ends with the given [suffix], returns a new char sequence\n * with the suffix removed. Otherwise, returns a new char\n sequence with the same characters.\n */\npublic fun CharSequence.removeSuffix(suffix: CharSequence):\n CharSequence {\n if (endsWith(suffix)) {\n return subSequence(0, length - suffix.length)\n }\n return\n subSequence(0, length)\n}\n\n/**\n * If this string ends with the given [suffix], returns a copy of this string\n * with\n the suffix removed. Otherwise, returns this string.\n */\npublic fun String.removeSuffix(suffix: CharSequence):\n String {\n if (endsWith(suffix)) {\n return substring(0, length - suffix.length)\n }\n return this\n}\n\n/**\n * When this char sequence starts with the given [prefix] and ends with the given [suffix],\n * returns a new char\n sequence having both the given [prefix] and [suffix] removed.\n * Otherwise returns a new char sequence with the\n same characters.\n */\npublic fun CharSequence.removeSurrounding(prefix: CharSequence, suffix: CharSequence):\n CharSequence {\n if ((length >= prefix.length + suffix.length) && startsWith(prefix) && endsWith(suffix)) {\n return subSequence(prefix.length, length - suffix.length)\n }\n return subSequence(0, length)\n}\n\n/**\n * Removes from a string both the given [prefix] and [suffix] if and only if\n * it starts with the [prefix] and ends with\n the [suffix].\n * Otherwise returns this string unchanged.\n */\npublic fun String.removeSurrounding(prefix:\n CharSequence, suffix: CharSequence): String {\n if ((length >= prefix.length + suffix.length) &&\n startsWith(prefix) && endsWith(suffix)) {\n return substring(prefix.length, length - suffix.length)\n }\n return this\n}\n\n/**\n * When this char sequence starts with and ends with the given [delimiter],\n * returns a new\n char sequence having this [delimiter] removed both from the start and end.\n * Otherwise returns a new char\n sequence with the same characters.\n */\npublic fun CharSequence.removeSurrounding(delimiter: CharSequence):\n CharSequence = removeSurrounding(delimiter, delimiter)\n\n/**\n * Removes the given [delimiter] string from both\n the start and the end of this string\n * if and only if it starts with and ends with the [delimiter].\n * Otherwise returns\n this string unchanged.\n */\npublic fun String.removeSurrounding(delimiter: CharSequence): String =\n removeSurrounding(delimiter, delimiter)\n\n/**\n * Replace part of string before the first occurrence of given\n delimiter with the [replacement] string.\n * If the string does not contain the delimiter, returns\n [missingDelimiterValue] which defaults to the original string.\n */\npublic fun String.replaceBefore(delimiter: Char,\n replacement: String, missingDelimiterValue: String = this): String {\n val index = indexOf(delimiter)\n return if\n (index == -1) missingDelimiterValue else replaceRange(0, index, replacement)\n}\n\n/**\n * Replace part of string\n before the first occurrence of given delimiter with the [replacement] string.\n * If the string does not contain the\n delimiter, returns [missingDelimiterValue] which defaults to the original\n string.\n */\npublic fun\n String.replaceBefore(delimiter: String, replacement: String, missingDelimiterValue: String = this): String {\n val\n index = indexOf(delimiter)\n return if (index == -1) missingDelimiterValue else replaceRange(0, index,\n replacement)\n}\n\n/**\n * Replace part of string after the first occurrence of given delimiter with the [replacement]\n string.\n * If the string does not contain the delimiter, returns [missingDelimiterValue] which defaults to the original\n string.\n */\npublic fun String.replaceAfter(delimiter: Char, replacement: String, missingDelimiterValue: String =\n this): String {\n val index = indexOf(delimiter)\n return if (index == -1) missingDelimiterValue else\n replaceRange(index + 1, length, replacement)\n}\n\n/**\n * Replace part of string after the first occurrence of given\n delimiter with the [replacement] string.\n * If the string does not contain the delimiter, returns\n [missingDelimiterValue] which defaults to the original string.\n */\npublic fun String.replaceAfter(delimiter: String,\n replacement: String, missingDelimiterValue: String = this): String {\n val index = indexOf(delimiter)\n return if\n (index == -1) missingDelimiterValue else replaceRange(index + delimiter.length, length, replacement)\n}\n\n/**\n * Replace part of string after the last occurrence of given delimiter with the [replacement] string.\n * If the string does\n not contain the delimiter, returns [missingDelimiterValue] which defaults to the original string.\n */\npublic fun

```

```

String.replaceAfterLast(delimiter: String, replacement: String, missingDelimiterValue: String = this): String {
    val index = lastIndexOf(delimiter)
    return if (index == -1) missingDelimiterValue else replaceRange(index +
    delimiter.length, length, replacement)
}

Replace part of string after the last occurrence of given
delimiter with the [replacement] string.
If the string does not contain the delimiter, returns
[missingDelimiterValue] which defaults to the original string.

public fun String.replaceAfterLast(delimiter:
Char, replacement: String, missingDelimiterValue: String = this): String {
    val index = lastIndexOf(delimiter)
    return if (index == -1) missingDelimiterValue else replaceRange(index + 1, length, replacement)
}

Replace part of string before the last occurrence of given delimiter with the [replacement] string.
If the string
does not contain the delimiter, returns [missingDelimiterValue] which defaults to the original string.

public fun String.replaceBeforeLast(delimiter: Char, replacement: String, missingDelimiterValue: String = this): String {
    val index = lastIndexOf(delimiter)
    return if (index == -1) missingDelimiterValue else replaceRange(0, index,
    replacement)
}

Replace part of string before the last occurrence of given delimiter with the
[replacement] string.
If the string does not contain the delimiter, returns [missingDelimiterValue] which defaults
to the original string.

public fun String.replaceBeforeLast(delimiter: String, replacement: String,
missingDelimiterValue: String = this): String {
    val index = lastIndexOf(delimiter)
    return if (index == -1)
    missingDelimiterValue else replaceRange(0, index, replacement)
}

public fun String.replace(oldChar: Char,
newChar: Char, ignoreCase: Boolean): String // JVM- and JS-specific
public fun String.replace(oldValue: String,
newValue: String, ignoreCase: Boolean): String // JVM- and JS-specific

Returns a new string obtained by
replacing each substring of this char sequence that matches the given regular expression
with the given
[replacement].
The [replacement] can consist of any combination of literal text and $-substitutions. To treat
the replacement string literally escape it with the [kotlin.text.Regex.Companion.escapeReplacement] method.

@kotlin.internal.InlineOnly
public inline fun CharSequence.replace(regex: Regex, replacement: String): String
= regex.replace(this, replacement)

Returns a new string obtained by replacing each substring of this char
sequence that matches the given regular expression
with the result of the given function [transform] that takes
[MatchResult] and returns a string to be used as a replacement for that match.

@kotlin.internal.InlineOnly
public inline fun CharSequence.replace(regex: Regex, noinline transform:
(MatchResult) -> CharSequence): String =
    regex.replace(this, transform)

Replaces the first
occurrence of the given regular expression [regex] in this char sequence with specified [replacement] expression.

@param replacement A replacement expression that can include substitutions. See [Regex.replaceFirst] for
details.

@kotlin.internal.InlineOnly
public inline fun CharSequence.replaceFirst(regex: Regex, replacement:
String): String = regex.replaceFirst(this, replacement)

Returns `true` if this char sequence matches the
given regular expression.

@kotlin.internal.InlineOnly
public inline infix fun CharSequence.matches(regex:
Regex): Boolean = regex.matches(this)

Implementation of [regionMatches] for CharSequences.
Invoked when it's already known that arguments are not Strings, so that no additional type checks are performed.

internal fun CharSequence.regionMatchesImpl(thisOffset: Int, other: CharSequence, otherOffset: Int, length: Int,
ignoreCase: Boolean): Boolean {
    if ((otherOffset < 0) || (thisOffset < 0) || (thisOffset > this.length - length) ||
    (otherOffset > other.length - length)) {
        return false
    }
    for (index in 0 until length) {
        if
        (!this[thisOffset + index].equals(other[otherOffset + index], ignoreCase)) {
            return false
        }
    }
    return
    true
}

Returns `true` if this char sequence starts with the specified character.

public fun
CharSequence.startsWith(char: Char, ignoreCase: Boolean = false): Boolean =
    this.length > 0 &&
    this[0].equals(char, ignoreCase)

Returns `true` if this char sequence ends with the specified character.

public fun
CharSequence.endsWith(char: Char, ignoreCase: Boolean = false): Boolean =
    this.length > 0 &&
    this[lastIndex].equals(char, ignoreCase)

Returns `true` if this char sequence starts with the specified
prefix.

public fun CharSequence.startsWith(prefix: CharSequence, ignoreCase: Boolean = false): Boolean {
    if (!ignoreCase && this is String && prefix is String)
        return this.startsWith(prefix)
    else
        return
        regionMatchesImpl(0, prefix, 0, prefix.length, ignoreCase)
}

Returns `true` if a substring of this char
sequence starting at the specified offset [startIndex] starts with the specified prefix.

public fun
CharSequence.startsWith(prefix: CharSequence, startIndex: Int, ignoreCase: Boolean = false): Boolean {
    if

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(ignoreCase && this is String && prefix is String)\n    return this.startsWith(prefix, startIndex)\n    else\nreturn regionMatchesImpl(startIndex, prefix, 0, prefix.length, ignoreCase)\n}\n\n/**\n * Returns `true` if this char
sequence ends with the specified suffix.\n */\npublic fun CharSequence.endsWith(suffix: CharSequence,
ignoreCase: Boolean = false): Boolean {\n    if (!ignoreCase && this is String && suffix is String)\n        return
this.endsWith(suffix)\n    else\n        return regionMatchesImpl(length - suffix.length, suffix, 0, suffix.length,
ignoreCase)\n}\n\n// common prefix and suffix\n/**\n * Returns the longest string `prefix` such that this char
sequence and [other] char sequence both start with this prefix,\n * taking care not to split surrogate pairs.\n * If this
and [other] have no common prefix, returns the empty string.\n */\n * @param ignoreCase `true` to ignore character
case when matching a character. By default `false`.\n * @sample samples.text.Strings.commonPrefixWith\n
*/\npublic fun CharSequence.commonPrefixWith(other: CharSequence, ignoreCase: Boolean = false): String {\n
val shortestLength = minOf(this.length, other.length)\n    var i = 0\n    while (i < shortestLength &&
this[i].equals(other[i], ignoreCase = ignoreCase)) {\n        i++\n    }\n    if (this.hasSurrogatePairAt(i - 1) ||
other.hasSurrogatePairAt(i - 1)) {\n        i--\n    }\n    return subSequence(0, i).toString()\n}\n\n/**\n * Returns the
longest string `suffix` such that this char sequence and [other] char sequence both end with this suffix,\n * taking
care not to split surrogate pairs.\n * If this and [other] have no common suffix, returns the empty string.\n */\n *
@param ignoreCase `true` to ignore character case when matching a character. By default `false`.\n * @sample
samples.text.Strings.commonSuffixWith\n
*/\npublic fun CharSequence.commonSuffixWith(other: CharSequence,
ignoreCase: Boolean = false): String {\n    val thisLength = this.length\n    val otherLength = other.length\n    val
shortestLength = minOf(thisLength, otherLength)\n    var i = 0\n    while (i < shortestLength && this[thisLength -
i - 1].equals(other[otherLength - i - 1], ignoreCase = ignoreCase)) {\n        i++\n    }\n    if
(this.hasSurrogatePairAt(thisLength - i - 1) || other.hasSurrogatePairAt(otherLength - i - 1)) {\n        i--\n    }\n
return subSequence(thisLength - i, thisLength).toString()\n}\n\n// indexOfAny()\n/**\n * Finds the index of the
first occurrence of any of the specified [chars] in this char sequence,\n * starting from the specified [startIndex] and
optionally ignoring the case.\n */\n * @param ignoreCase `true` to ignore character case when matching a character.
By default `false`.\n * @return An index of the first occurrence of matched character from [chars] or -1 if none of
[chars] are found.\n */\n * \npublic fun CharSequence.indexOfAny(chars: CharArray, startIndex: Int = 0, ignoreCase:
Boolean = false): Int {\n    if (!ignoreCase && chars.size == 1 && this is String) {\n        val char = chars.single()\n
return nativeIndexOf(char, startIndex)\n    }\n    for (index in startIndex.coerceAtLeast(0)..lastIndex) {\n        val
charAtIndex = get(index)\n        if (chars.any { it.equals(charAtIndex, ignoreCase) })\n            return index\n    }\n
return -1\n}\n\n/**\n * Finds the index of the last occurrence of any of the specified [chars] in this char sequence,\n
* starting from the specified [startIndex] and optionally ignoring the case.\n */\n * @param startIndex The index of
character to start searching at. The search proceeds backward toward the beginning of the string.\n * @param
ignoreCase `true` to ignore character case when matching a character. By default `false`.\n * @return An index of
the last occurrence of matched character from [chars] or -1 if none of [chars] are found.\n */\n * \npublic fun
CharSequence.lastIndexOfAny(chars: CharArray, startIndex: Int = lastIndex, ignoreCase: Boolean = false): Int {\n
if (!ignoreCase && chars.size == 1 && this is String) {\n        val char = chars.single()\n        return
nativeLastIndexOf(char, startIndex)\n    }\n    for (index in startIndex.coerceAtMost(lastIndex) downTo 0) {\n
val charAtIndex = get(index)\n        if (chars.any { it.equals(charAtIndex, ignoreCase) })\n            return index\n
}\n    return -1\n}\n\nprivate fun CharSequence.indexOf(other: CharSequence, startIndex: Int, endIndex: Int,
ignoreCase: Boolean, last: Boolean = false): Int {\n    val indices = if (!last)\n        startIndex.coerceAtLeast(0)..endIndex.coerceAtMost(length)\n    else\n        startIndex.coerceAtMost(lastIndex)
downTo endIndex.coerceAtLeast(0)\n    if (this is String && other is String) { // smart cast\n        for (index in
indices) {\n            if (other.regionMatches(0, this, index, other.length, ignoreCase))\n                return index\n
}\n    } else {\n        for (index in indices) {\n            if (other.regionMatchesImpl(0, this, index, other.length,
ignoreCase))\n                return index\n        }\n    }\n    return -1\n}\n\nprivate fun CharSequence.findAnyOf(strings:
Collection<String>, startIndex: Int, ignoreCase: Boolean, last: Boolean): Pair<Int, String>? {\n    if (!ignoreCase
&& strings.size == 1) {\n        val string = strings.single()\n        val index = if (!last) indexOf(string, startIndex) else
lastIndexOf(string, startIndex)\n        return if (index < 0) null else index to string\n    }\n    val indices = if (!last)

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startIndex.coerceAtLeast(0)..length else startIndex.coerceAtMost(lastIndex) downTo 0\n\n if (this is String) {\n
for (index in indices) {\n      val matchingString = strings.firstOrNull { it.regionMatches(0, this, index, it.length,\n
ignoreCase) }\n      if (matchingString != null)\n          return index to matchingString\n      }\n  } else {\n
for (index in indices) {\n      val matchingString = strings.firstOrNull { it.regionMatchesImpl(0, this, index,\n
it.length, ignoreCase) }\n      if (matchingString != null)\n          return index to matchingString\n      }\n  }\n  }\n\n return null\n}\n\n/**\n * Finds the first occurrence of any of the specified [strings] in this char sequence,\n * starting from the specified [startIndex] and optionally ignoring the case.\n * @param ignoreCase `true` to ignore character case when matching a string. By default `false`.\n * @return A pair of an index of the first occurrence of matched string from [strings] and the string matched\n * or `null` if none of [strings] are found.\n * To avoid ambiguous results when strings in [strings] have characters in common, this method proceeds from\n * the beginning to the end of this string, and finds at each position the first element in [strings]\n * that matches this string at that position.\n */\npublic fun CharSequence.findAnyOf(strings: Collection<String>, startIndex: Int = 0,\nignoreCase: Boolean = false): Pair<Int, String>? =\n    findAnyOf(strings, startIndex, ignoreCase, last = false)\n}\n\n/**\n * Finds the last occurrence of any of the specified [strings] in this char sequence,\n * starting from the specified [startIndex] and optionally ignoring the case.\n * @param startIndex The index of character to start searching at. The search proceeds backward toward the beginning of the string.\n * @param ignoreCase `true` to ignore character case when matching a string. By default `false`.\n * @return A pair of an index of the last occurrence of matched string from [strings] and the string matched or `null` if none of [strings] are found.\n * To avoid ambiguous results when strings in [strings] have characters in common, this method proceeds from\n * the end toward the beginning of this string, and finds at each position the first element in [strings]\n * that matches this string at that position.\n */\npublic fun CharSequence.findLastAnyOf(strings: Collection<String>, startIndex: Int =\nlastIndex, ignoreCase: Boolean = false): Pair<Int, String>? =\n    findAnyOf(strings, startIndex, ignoreCase, last = true)\n}\n\n/**\n * Finds the index of the first occurrence of any of the specified [strings] in this char sequence,\n * starting from the specified [startIndex] and optionally ignoring the case.\n * @param ignoreCase `true` to ignore character case when matching a string. By default `false`.\n * @return An index of the first occurrence of matched string from [strings] or -1 if none of [strings] are found.\n * To avoid ambiguous results when strings in [strings] have characters in common, this method proceeds from\n * the beginning to the end of this string, and finds at each position the first element in [strings]\n * that matches this string at that position.\n */\npublic fun\nCharSequence.indexOfAny(strings: Collection<String>, startIndex: Int = 0, ignoreCase: Boolean = false): Int =\n    findAnyOf(strings, startIndex, ignoreCase, last = false)?.first ?: -1\n}\n\n/**\n * Finds the index of the last occurrence of any of the specified [strings] in this char sequence,\n * starting from the specified [startIndex] and optionally ignoring the case.\n * @param startIndex The index of character to start searching at. The search proceeds backward toward the beginning of the string.\n * @param ignoreCase `true` to ignore character case when matching a string. By default `false`.\n * @return An index of the last occurrence of matched string from [strings] or -1 if none of [strings] are found.\n * To avoid ambiguous results when strings in [strings] have characters in common, this method proceeds from\n * the end toward the beginning of this string, and finds at each position the first element in [strings]\n * that matches this string at that position.\n */\npublic fun\nCharSequence.lastIndexOfAny(strings: Collection<String>, startIndex: Int = lastIndex, ignoreCase: Boolean =\nfalse): Int =\n    findAnyOf(strings, startIndex, ignoreCase, last = true)?.first ?: -1\n}\n\n/**\n * Returns the index within this string of the first occurrence of the specified character, starting from the specified\n * [startIndex].\n * @param ignoreCase `true` to ignore character case when matching a character. By default `false`.\n * @return An index of the first occurrence of [char] or -1 if none is found.\n */\npublic fun\nCharSequence.indexOf(char: Char, startIndex: Int = 0, ignoreCase: Boolean = false): Int {\n    return if (ignoreCase\n|| this !is String)\n        indexOfAny(charArrayOf(char), startIndex, ignoreCase)\n    else\n        nativeIndexOf(char, startIndex)\n}\n}\n\n/**\n * Returns the index within this char sequence of the first occurrence of the specified\n * [string],\n * starting from the specified [startIndex].\n * @param ignoreCase `true` to ignore character case when matching a string. By default `false`.\n * @return An index of the first occurrence of [string] or -1 if none is found.\n * @sample samples.text.Strings.indexOf\n */\npublic fun CharSequence.indexOf(string: String, startIndex:

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Int = 0, ignoreCase: Boolean = false): Int {\n  return if (ignoreCase || this !is String)\n    indexOf(string,
startIndex, length, ignoreCase)\n  else\n    nativeIndexOf(string, startIndex)\n}\n\n/**\n * Returns the index
within this char sequence of the last occurrence of the specified character,\n * starting from the specified
[startIndex].\n *\n * @param startIndex The index of character to start searching at. The search proceeds backward
toward the beginning of the string.\n *\n * @param ignoreCase `true` to ignore character case when matching a
character. By default `false`.\n *\n * @return An index of the last occurrence of [char] or -1 if none is found.\n
*\n */\npublic fun CharSequence.lastIndexOf(char: Char, startIndex: Int = lastIndex, ignoreCase: Boolean = false): Int
{\n  return if (ignoreCase || this !is String)\n    lastIndexOfAny(charArrayOf(char), startIndex, ignoreCase)\n
  else\n    nativeLastIndexOf(char, startIndex)\n}\n\n/**\n * Returns the index within this char sequence of the last
occurrence of the specified [string],\n * starting from the specified [startIndex].\n *\n * @param startIndex The
index of character to start searching at. The search proceeds backward toward the beginning of the string.\n *\n
* @param ignoreCase `true` to ignore character case when matching a string. By default `false`.\n *\n * @return An index
of the last occurrence of [string] or -1 if none is found.\n *\n */\npublic fun CharSequence.lastIndexOf(string: String,
startIndex: Int = lastIndex, ignoreCase: Boolean = false): Int {\n  return if (ignoreCase || this !is String)\n
  indexOf(string, startIndex, 0, ignoreCase, last = true)\n  else\n    nativeLastIndexOf(string,
startIndex)\n}\n\n/**\n * Returns `true` if this char sequence contains the specified [other] sequence of characters as
a substring.\n *\n * @param ignoreCase `true` to ignore character case when comparing strings. By default `false`.\n
*\n */\n@Suppress("INAPPLICABLE_OPERATOR_MODIFIER")\npublic operator fun
CharSequence.contains(other: CharSequence, ignoreCase: Boolean = false): Boolean =\n  if (other is String)\n
  indexOf(other, ignoreCase = ignoreCase) >= 0\n  else\n    indexOf(other, 0, length, ignoreCase) >=
0\n}\n\n/**\n * Returns `true` if this char sequence contains the specified character [char].\n *\n * @param
ignoreCase `true` to ignore character case when comparing characters. By default `false`.\n *\n */\n@Suppress("INAPPLICABLE_OPERATOR_MODIFIER")\npublic operator fun CharSequence.contains(char:
Char, ignoreCase: Boolean = false): Boolean =\n  indexOf(char, ignoreCase = ignoreCase) >= 0\n}\n\n/**\n * Returns
`true` if this char sequence contains at least one match of the specified regular expression [regex].\n *\n */\n@kotlin.internal.InlineOnly\npublic inline operator fun CharSequence.contains(regex: Regex): Boolean =
regex.containsMatchIn(this)\n\n// rangesDelimitedBy\n\nprivate class DelimitedRangesSequence(\n  private
val input: CharSequence,\n  private val startIndex: Int,\n  private val limit: Int,\n  private val getNextMatch:
CharSequence.(currentIndex: Int) -> Pair<Int, Int>?) : Sequence<IntRange> {\n\n  override fun iterator():
Iterator<IntRange> = object : Iterator<IntRange> {\n\n    var nextState: Int = -1 // -1 for unknown, 0 for done, 1 for
continue\n\n    var currentStartIndex: Int = startIndex.coerceIn(0, input.length)\n\n    var nextSearchIndex: Int =
currentStartIndex\n\n    var nextItem: IntRange? = null\n\n    var counter: Int = 0\n\n    private fun calcNext() {\n\n
      if (nextSearchIndex < 0) {\n\n        nextState = 0\n\n        nextItem = null\n\n      } else {\n\n        if
(limit > 0 && ++counter >= limit || nextSearchIndex > input.length) {\n\n          nextItem =
currentStartIndex..input.lastIndex\n\n          nextSearchIndex = -1\n\n        } else {\n\n          val match =
input.getNextMatch(nextSearchIndex)\n\n          if (match == null) {\n\n            nextItem =
currentStartIndex..input.lastIndex\n\n            nextSearchIndex = -1\n\n          } else {\n\n            val
(index, length) = match\n\n            nextItem = currentStartIndex until index\n\n            currentStartIndex
= index + length\n\n            nextSearchIndex = currentStartIndex + if (length == 0) 1 else 0\n\n          }\n\n
        }\n\n        nextState = 1\n\n      }\n\n    }\n\n    override fun next(): IntRange {\n\n      if (nextState ==
-1)\n\n        calcNext()\n\n      if (nextState == 0)\n\n        throw NoSuchElementException()\n\n      val
result = nextItem as IntRange\n\n      // Clean next to avoid keeping reference on yielded instance\n\n      nextItem = null\n\n      nextState = -1\n\n      return result\n\n    }\n\n    override fun hasNext(): Boolean {\n\n      if (nextState == -1)\n\n        calcNext()\n\n      return nextState == 1\n\n    }\n\n  }\n}\n\n/**\n * Returns a
sequence of index ranges of substrings in this char sequence around occurrences of the specified [delimiters].\n *\n *
@param delimiters One or more characters to be used as delimiters.\n *\n * @param startIndex The index to start
searching delimiters from.\n *\n * No range having its start value less than [startIndex] is returned.\n *\n * [startIndex] is
coerced to be non-negative and not greater than length of this string.\n *\n * @param ignoreCase `true` to ignore

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character case when matching a delimiter. By default `false`.
    @param limit The maximum number of substrings
to return. Zero by default means no limit is set.
private fun CharSequence.rangesDelimitedBy(delimiters:
CharArray, startIndex: Int = 0, ignoreCase: Boolean = false, limit: Int = 0): Sequence<IntRange> {
    require(limit >= 0, { "Limit must be non-negative, but was $limit." })
    return DelimitedRangesSequence(this, startIndex,
limit, { currentIndex ->
        indexOfAny(delimiters, currentIndex, ignoreCase = ignoreCase).let { if (it < 0) null
else it to 1 } })
}
Returns a sequence of index ranges of substrings in this char sequence around
occurrences of the specified [delimiters].
    @param delimiters One or more strings to be used as delimiters.
    @param startIndex The index to start searching delimiters from.
    No range having its start value less than
[startIndex] is returned.
    [startIndex] is coerced to be non-negative and not greater than length of this string.
    @param ignoreCase `true` to ignore character case when matching a delimiter. By default `false`.
    @param limit The maximum number of substrings to return. Zero by default means no limit is set.
    To avoid ambiguous
results when strings in [delimiters] have characters in common, this method proceeds from
the beginning to the
end of this string, and finds at each position the first element in [delimiters] that matches this string at that
position.
private fun CharSequence.rangesDelimitedBy(delimiters: Array<out String>, startIndex: Int = 0,
ignoreCase: Boolean = false, limit: Int = 0): Sequence<IntRange> {
    require(limit >= 0, { "Limit must be non-
negative, but was $limit." })
    val delimitersList = delimiters.asList()
    return
DelimitedRangesSequence(this, startIndex, limit, { currentIndex -> findAnyOf(delimitersList, currentIndex,
ignoreCase = ignoreCase, last = false)?.let { it.first to it.second.length } })
}
Splits this
char sequence to a sequence of strings around occurrences of the specified [delimiters].
    @param delimiters
One or more strings to be used as delimiters.
    @param ignoreCase `true` to ignore character case when matching
a delimiter. By default `false`.
    @param limit The maximum number of substrings to return. Zero by default
means no limit is set.
    To avoid ambiguous results when strings in [delimiters] have characters in common,
this method proceeds from
the beginning to the end of this string, and finds at each position the first element in
[delimiters] that matches this string at that position.
public fun CharSequence.splitToSequence(vararg
delimiters: String, ignoreCase: Boolean = false, limit: Int = 0): Sequence<String> =
rangesDelimitedBy(delimiters, ignoreCase = ignoreCase, limit = limit).map { substring(it) }
}
Splits this
char sequence to a list of strings around occurrences of the specified [delimiters].
    @param delimiters One or
more strings to be used as delimiters.
    @param ignoreCase `true` to ignore character case when matching a
delimiter. By default `false`.
    @param limit The maximum number of substrings to return. Zero by default means
no limit is set.
    To avoid ambiguous results when strings in [delimiters] have characters in common, this
method proceeds from
the beginning to the end of this string, and matches at each position the first element in
[delimiters] that is equal to a delimiter in this instance at that position.
public fun
CharSequence.split(vararg delimiters: String, ignoreCase: Boolean = false, limit: Int = 0): List<String> {
    if
(delimiters.size == 1) {
        val delimiter = delimiters[0]
        if (!delimiter.isEmpty()) {
            return
split(delimiter, ignoreCase, limit)
        }
    }
    return rangesDelimitedBy(delimiters, ignoreCase =
ignoreCase, limit = limit).asIterable().map { substring(it) }
}
Splits this char sequence to a sequence of
strings around occurrences of the specified [delimiters].
    @param delimiters One or more characters to be
used as delimiters.
    @param ignoreCase `true` to ignore character case when matching a delimiter. By default
`false`.
    @param limit The maximum number of substrings to return.
public fun
CharSequence.splitToSequence(vararg delimiters: Char, ignoreCase: Boolean = false, limit: Int = 0):
Sequence<String> =
rangesDelimitedBy(delimiters, ignoreCase = ignoreCase, limit = limit).map { substring(it)
}
}
Splits this char sequence to a list of strings around occurrences of the specified [delimiters].
    @param delimiters One or more characters to be used as delimiters.
    @param ignoreCase `true` to ignore
character case when matching a delimiter. By default `false`.
    @param limit The maximum number of substrings
to return.
public fun CharSequence.split(vararg delimiters: Char, ignoreCase: Boolean = false, limit: Int = 0):
List<String> {
    if (delimiters.size == 1) {
        return split(delimiters[0].toString(), ignoreCase, limit)
    }
    return rangesDelimitedBy(delimiters, ignoreCase = ignoreCase, limit = limit).asIterable().map { substring(it)
}
}
Splits this char sequence to a list of strings around occurrences of the specified [delimiter].
    This

```

```

is specialized version of split which receives single non-empty delimiter and offers better performance
@param delimiter String used as delimiter
@param ignoreCase `true` to ignore character case when matching a
delimiter. By default `false`.
@param limit The maximum number of substrings to return.
private fun
CharSequence.split(delimiter: String, ignoreCase: Boolean, limit: Int): List<String> {
    require(limit >= 0, {
        "Limit must be non-negative, but was $limit."
    })
    var currentOffset = 0
    var nextIndex =
        indexOf(delimiter, currentOffset, ignoreCase)
    if (nextIndex == -1 || limit == 1) {
        return
        listOf(this.toString())
    }
    val isLimited = limit > 0
    val result = ArrayList<String>(if (isLimited)
        limit.coerceAtMost(10) else 10)
    do {
        result.add(substring(currentOffset, nextIndex))
        currentOffset
            = nextIndex + delimiter.length
        // Do not search for next occurrence if we're reaching limit
        if (isLimited
            && result.size == limit - 1) break
        nextIndex = indexOf(delimiter, currentOffset, ignoreCase)
    } while
        (nextIndex != -1)
    result.add(substring(currentOffset, length))
    return result
}

Splits this char
sequence around matches of the given regular expression.
@param limit Non-negative value specifying the
maximum number of substrings to return.
Zero by default means no limit is set.

@kotlin.internal.InlineOnly
public inline fun CharSequence.split(regex: Regex, limit: Int = 0): List<String> =
    regex.split(this, limit)

Splits this char sequence to a sequence of lines delimited by any of the following
character sequences: CRLF, LF or CR.
The lines returned do not include terminating line separators.

public fun CharSequence.lineSequence(): Sequence<String> = splitToSequence("\\r\\n", "\\n",
    "\\r")

Splits this char sequence to a list of lines delimited by any of the following character sequences:
CRLF, LF or CR.
The lines returned do not include terminating line separators.

public fun
CharSequence.lines(): List<String> = lineSequence().toList()

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can be found in the license/LICENSE.txt file.

package kotlin.text
import kotlin.js.RegExp

Converts the characters in the specified array to a string.
@SinceKotlin("1.2")
public actual fun
String(chars: CharArray): String {
    var result = ""
    for (char in chars) {
        result += char
    }
    return
    result
}

Converts the characters from a portion of the specified array to a string.
@throws
IndexOutOfBoundsException if either [offset] or [length] are less than zero
or `offset + length` is out of [chars]
array bounds.
@SinceKotlin("1.2")
public actual fun String(chars: CharArray, offset: Int, length: Int):
String {
    if (offset < 0 || length < 0 || chars.size - offset < length)
        throw
        IndexOutOfBoundsException("size: ${chars.size}; offset: $offset; length: $length")
    var result = ""
    for
        (index in offset until offset + length) {
        result += chars[index]
    }
    return result
}

Concatenates characters in this [CharArray] into a String.

@SinceKotlin("1.3")
@ExperimentalStdlibApi
public actual fun CharArray.concatToString(): String {
    var result = ""
    for (char in this) {
        result += char
    }
    return result
}

Concatenates
characters in this [CharArray] or its subrange into a String.
@param startIndex the beginning (inclusive) of
the subrange of characters, 0 by default.
@param endIndex the end (exclusive) of the subrange of characters,
size of this array by default.
@throws IndexOutOfBoundsException if [startIndex] is less than zero or
[endIndex] is greater than the size of this array.
@throws IllegalArgumentException if [startIndex] is greater
than [endIndex].

@SinceKotlin("1.3")
@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")
@ExperimentalStdlibApi
public actual fun CharArray.concatToString(startIndex: Int = 0, endIndex: Int = this.size): String
{
    AbstractList.checkBoundsIndexes(startIndex, endIndex, this.size)
    var result = ""
    for (index in
        startIndex until endIndex) {
        result += this[index]
    }
    return result
}

Returns a [CharArray]
containing characters of this string.
@SinceKotlin("1.3")
@ExperimentalStdlibApi
public actual fun
String.toCharArray(): CharArray {
    return CharArray(length) { get(it) }
}

Returns a [CharArray]
containing characters of this string or its substring.
@param startIndex the beginning (inclusive) of the
substring, 0 by default.
@param endIndex the end (exclusive) of the substring, length of this string by default.
@throws IndexOutOfBoundsException if [startIndex] is less than zero or [endIndex] is greater than the length
of this string.
@throws IllegalArgumentException if [startIndex] is greater than [endIndex].

```

```

*\n@SinceKotlin("1.3")\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\n@ExperimentalStdlibApi\npublic actual fun String.toCharArray(startIndex: Int = 0, endIndex: Int = this.length): CharArray {
\n  AbstractList.checkBoundsIndexes(startIndex, endIndex, length)\n  return CharArray(endIndex - startIndex) {
  get(startIndex + it) }\n}\n\n**\n * Decodes a string from the bytes in UTF-8 encoding in this array.\n *\n * Malformed byte sequences are replaced by the replacement char `\\uFFFF`.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic actual fun ByteArray.decodeToString(): String {
\n  return decodeUtf8(this, 0, size, false)\n}\n\n**\n * Decodes a string from the bytes in UTF-8 encoding in this array or its subrange.\n *\n * @param startIndex the beginning (inclusive) of the subrange to decode, 0 by default.\n * @param endIndex the end (exclusive) of the subrange to decode, size of this array by default.\n * @param throwOnInvalidSequence specifies whether to throw an exception on malformed byte sequence or replace it by the replacement char `\\uFFFD`.\n *\n * @throws IndexOutOfBoundsException if [startIndex] is less than zero or [endIndex] is greater than the size of this array.\n * @throws IllegalArgumentException if [startIndex] is greater than [endIndex].\n * @throws CharacterCodingException if the byte array contains malformed UTF-8 byte sequence and [throwOnInvalidSequence] is true.\n
*\n@SinceKotlin("1.3")\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\n@ExperimentalStdlibApi\npublic actual fun ByteArray.decodeToString(\n  startIndex: Int = 0,\n  endIndex: Int = this.size,\n  throwOnInvalidSequence: Boolean = false\n): String {
\n  AbstractList.checkBoundsIndexes(startIndex, endIndex, this.size)\n  return decodeUtf8(this, startIndex, endIndex, throwOnInvalidSequence)\n}\n\n**\n * Encodes this string to an array of bytes in UTF-8 encoding.\n *\n * Any malformed char sequence is replaced by the replacement byte sequence.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic actual fun String.encodeToByteArray(): ByteArray {
\n  return encodeUtf8(this, 0, length, false)\n}\n\n**\n * Encodes this string or its substring to an array of bytes in UTF-8 encoding.\n *\n * @param startIndex the beginning (inclusive) of the substring to encode, 0 by default.\n * @param endIndex the end (exclusive) of the substring to encode, length of this string by default.\n * @param throwOnInvalidSequence specifies whether to throw an exception on malformed char sequence or replace.\n *\n * @throws IndexOutOfBoundsException if [startIndex] is less than zero or [endIndex] is greater than the length of this string.\n * @throws IllegalArgumentException if [startIndex] is greater than [endIndex].\n * @throws CharacterCodingException if this string contains malformed char sequence and [throwOnInvalidSequence] is true.\n
*\n@SinceKotlin("1.3")\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\n@ExperimentalStdlibApi\npublic actual fun String.encodeToByteArray(\n  startIndex: Int = 0,\n  endIndex: Int = this.length,\n  throwOnInvalidSequence: Boolean = false\n): ByteArray {
\n  AbstractList.checkBoundsIndexes(startIndex, endIndex, length)\n  return encodeUtf8(this, startIndex, endIndex, throwOnInvalidSequence)\n}\n\n**\n * Returns a copy of this string converted to upper case using the rules of the default locale.\n *\n * @sample samples.text.Strings.toUpperCase\n *\n@kotlin.internal.InlineOnly\npublic actual inline fun String.toUpperCase(): String = asDynamic().toUpperCase()\n\n**\n * Returns a copy of this string converted to lower case using the rules of the default locale.\n *\n * @sample samples.text.Strings.toLowerCase\n *\n@kotlin.internal.InlineOnly\npublic actual inline fun String.toLowerCase(): String = asDynamic().toLowerCase()\n\n@kotlin.internal.InlineOnly\ninternal actual inline fun String.nativeIndexOf(str: String, fromIndex: Int): Int = asDynamic().indexOf(str, fromIndex)\n\n@kotlin.internal.InlineOnly\ninternal actual inline fun String.nativeLastIndexOf(str: String, fromIndex: Int): Int = asDynamic().lastIndexOf(str, fromIndex)\n\n@kotlin.internal.InlineOnly\ninternal inline fun String.nativeStartsWith(s: String, position: Int): Boolean = asDynamic().startsWith(s, position)\n\n@kotlin.internal.InlineOnly\ninternal inline fun String.nativeEndsWith(s: String): Boolean = asDynamic().endsWith(s)\n\n@kotlin.internal.InlineOnly\npublic actual inline fun String.substring(startIndex: Int): String = asDynamic().substring(startIndex)\n\n@kotlin.internal.InlineOnly\npublic actual inline fun String.substring(startIndex: Int, endIndex: Int): String = asDynamic().substring(startIndex, endIndex)\n\n@kotlin.internal.InlineOnly\npublic inline fun String.concat(str: String): String = asDynamic().concat(str)\n\n@kotlin.internal.InlineOnly\npublic inline fun String.match(regex: String):

```

```

Array<String>? = asDynamic().match(regex)\n\n//native public fun String.trim(): String\n//TODO: String.replace to
implement effective trimLeading and trimTrailing\n\n@kotlin.internal.InlineOnly\ninternal inline fun
String.nativeReplace(pattern: RegExp, replacement: String): String = asDynamic().replace(pattern,
replacement)\n\n@SinceKotlin("1.2")\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS
")\npublic actual fun String.compareTo(other: String, ignoreCase: Boolean = false): Int {\n    if (ignoreCase) {\n
val n1 = this.length\n        val n2 = other.length\n        val min = minOf(n1, n2)\n        if (min == 0) return n1 - n2\n
        var start = 0\n        while (true) {\n            val end = minOf(start + 16, min)\n            var s1 = this.substring(start,
end)\n            var s2 = other.substring(start, end)\n            if (s1 != s2) {\n                s1 = s1.toUpperCase()\n
s2 = s2.toUpperCase()\n                if (s1 != s2) {\n                    s1 = s1.toLowerCase()\n                    s2 =
s2.toLowerCase()\n                    if (s1 != s2) {\n                        return s1.compareTo(s2)\n                    }\n
}\n            }\n            if (end == min) break\n            start = end\n        }\n        return n1 - n2\n    } else {\n        return
compareTo(other)\n    }\n}\n\nprivate val STRING_CASE_INSENSITIVE_ORDER = Comparator<String> { a, b
-> a.compareTo(b, ignoreCase = true) }\n\n@SinceKotlin("1.2")\npublic actual val
String.Companion.CASE_INSENSITIVE_ORDER: Comparator<String>\n    get() =
STRING_CASE_INSENSITIVE_ORDER\n"}\n\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming
Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n *\n\n// Auto-generated file. DO NOT EDIT!\n\npackage
kotlin\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic inline class
UByteArray\n@Suppress("NON_PUBLIC_PRIMARY_CONSTRUCTOR_OF_INLINE_CLASS")\n@Published
Api\ninternal constructor(@PublishedApi internal val storage: ByteArray) : Collection<UByte> {\n\n    /** Creates
a new array of the specified [size], with all elements initialized to zero. *\n    public constructor(size: Int) :
this(ByteArray(size))\n\n    /**\n     * Returns the array element at the given [index]. This method can be called
using the index operator.\n     *\n     * If the [index] is out of bounds of this array, throws an
[IndexOutOfBoundsException] except in Kotlin/JS\n     * where the behavior is unspecified.\n     *\n    public
operator fun get(index: Int): UByte = storage[index].toUByte()\n\n    /**\n     * Sets the element at the given [index]
to the given [value]. This method can be called using the index operator.\n     *\n     * If the [index] is out of bounds
of this array, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n     * where the behavior is
unspecified.\n     *\n    public operator fun set(index: Int, value: UByte) {\n        storage[index] = value.toByte()\n
}\n\n    /** Returns the number of elements in the array. *\n    public override val size: Int get() = storage.size\n\n
/** Creates an iterator over the elements of the array. *\n    public override operator fun iterator(): UByteIterator =
Iterator(storage)\n\n    private class Iterator(private val array: ByteArray) : UByteIterator() {\n        private var index
= 0\n        override fun hasNext() = index < array.size\n        override fun nextUByte() = if (index < array.size)
array[index++].toUByte() else throw NoSuchElementException(index.toString())\n    }\n\n    override fun
contains(element: UByte): Boolean {\n        // TODO: Eliminate this check after KT-30016 gets fixed.\n        //
Currently JS BE does not generate special bridge method for this method.\n        if ((element as Any?) !is UByte)
return false\n        return storage.contains(element.toByte())\n    }\n\n    override fun containsAll(elements:
Collection<UByte>): Boolean {\n        return (elements as Collection<*>).all { it is UByte &&
storage.contains(it.toByte()) }\n    }\n\n    override fun isEmpty(): Boolean = this.storage.size == 0\n}\n\n/**\n *
Creates a new array of the specified [size], where each element is calculated by calling the specified\n * [init]
function.\n * *\n * The function [init] is called for each array element sequentially starting from the first one.\n * It
should return the value for an array element given its index.\n\n *\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray(size: Int, init: (Int) -> UByte): UByteArray {\n    return UByteArray(ByteArray(size) { index ->
init(index).toByte()
})\n}\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ubyteArrayOf(vararg elements: UByte): UByteArray = elements\n"}\n\n * Copyright 2010-2019 JetBrains s.r.o. and
Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that
can be found in the license/LICENSE.txt file.\n *\n\n// Auto-generated file. DO NOT EDIT!\n\npackage

```

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kotlin\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic inline class
UIntArray\n@Suppress("NON_PUBLIC_PRIMARY_CONSTRUCTOR_OF_INLINE_CLASS")\n@PublishedAp
i\ninternal constructor(@PublishedApi internal val storage: IntArray) : Collection<UInt> {\n\n /** Creates a new
array of the specified [size], with all elements initialized to zero. *\n public constructor(size: Int) :
this(IntArray(size))\n\n /**\n * Returns the array element at the given [index]. This method can be called using
the index operator.\n *\n * If the [index] is out of bounds of this array, throws an
[IndexOutOfBoundsExcepion] except in Kotlin/JS\n * where the behavior is unspecified.\n *\n public
operator fun get(index: Int): UInt = storage[index].toInt()\n\n /**\n * Sets the element at the given [index] to
the given [value]. This method can be called using the index operator.\n *\n * If the [index] is out of bounds of
this array, throws an [IndexOutOfBoundsExcepion] except in Kotlin/JS\n * where the behavior is unspecified.\n
*\n public operator fun set(index: Int, value: UInt) {\n storage[index] = value.toInt()\n }\n\n /** Returns
the number of elements in the array. *\n public override val size: Int get() = storage.size\n\n /** Creates an
iterator over the elements of the array. *\n public override operator fun iterator(): UIntIterator =
Iterator(storage)\n\n private class Iterator(private val array: IntArray) : UIntIterator() {\n private var index =
0\n override fun hasNext() = index < array.size\n override fun nextUInt() = if (index < array.size)
array[index++].toInt() else throw NoSuchElementException(index.toString())\n }\n\n override fun
contains(element: UInt): Boolean {\n // TODO: Eliminate this check after KT-30016 gets fixed.\n //
Currently JS BE does not generate special bridge method for this method.\n if ((element as Any?) !is UInt)
return false\n\n return storage.contains(element.toInt())\n }\n\n override fun containsAll(elements:
Collection<UInt>): Boolean {\n return (elements as Collection<*>).all { it is UInt &&
storage.contains(it.toInt()) }\n }\n\n override fun isEmpty(): Boolean = this.storage.size == 0}\n\n/**\n *
Creates a new array of the specified [size], where each element is calculated by calling the specified\n * [init]
function.\n *\n * The function [init] is called for each array element sequentially starting from the first one.\n * It
should return the value for an array element given its index.\n
*\n\n*\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray(size: Int, init: (Int) -> UInt): UIntArray {\n return UIntArray(IntArray(size) { index ->
init(index).toInt()
})\n}\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
uintArrayOf(vararg elements: UInt): UIntArray = elements\n", "/*\n * Copyright 2010-2019 JetBrains s.r.o. and
Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that
can be found in the license/LICENSE.txt file.\n */\n\n// Auto-generated file. DO NOT EDIT!\n\npackage
kotlin\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic inline class
ULongArray\n@Suppress("NON_PUBLIC_PRIMARY_CONSTRUCTOR_OF_INLINE_CLASS")\n@Published
Api\ninternal constructor(@PublishedApi internal val storage: LongArray) : Collection<ULong> {\n\n /** Creates
a new array of the specified [size], with all elements initialized to zero. *\n public constructor(size: Int) :
this(LongArray(size))\n\n /**\n * Returns the array element at the given [index]. This method can be called
using the index operator.\n *\n * If the [index] is out of bounds of this array, throws an
[IndexOutOfBoundsExcepion] except in Kotlin/JS\n * where the behavior is unspecified.\n *\n public
operator fun get(index: Int): ULong = storage[index].toULong()\n\n /**\n * Sets the element at the given
[index] to the given [value]. This method can be called using the index operator.\n *\n * If the [index] is out of
bounds of this array, throws an [IndexOutOfBoundsExcepion] except in Kotlin/JS\n * where the behavior is
unspecified.\n *\n public operator fun set(index: Int, value: ULong) {\n storage[index] = value.toLong()\n
}\n\n /** Returns the number of elements in the array. *\n public override val size: Int get() = storage.size\n\n
/** Creates an iterator over the elements of the array. *\n public override operator fun iterator(): ULongIterator =
Iterator(storage)\n\n private class Iterator(private val array: LongArray) : ULongIterator() {\n private var
index = 0\n override fun hasNext() = index < array.size\n override fun nextULong() = if (index < array.size)
array[index++].toULong() else throw NoSuchElementException(index.toString())\n }\n\n override fun
contains(element: ULong): Boolean {\n // TODO: Eliminate this check after KT-30016 gets fixed.\n //

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Currently JS BE does not generate special bridge method for this method.\n    if ((element as Any?) !is ULong)
return false\n\n    return storage.contains(element.toLong())\n    }\n\n    override fun containsAll(elements:
Collection<ULong>): Boolean {\n        return (elements as Collection<*>).all { it is ULong &&
storage.contains(it.toLong()) }\n    }\n\n    override fun isEmpty(): Boolean = this.storage.size == 0\n\n/**\n *
Creates a new array of the specified [size], where each element is calculated by calling the specified\n * [init]
function.\n * The function [init] is called for each array element sequentially starting from the first one.\n * It
should return the value for an array element given its index.\n
*/\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray(size: Int, init: (Int) -> ULong): ULongArray {\n    return ULongArray(LongArray(size) { index ->
init(index).toLong()
})\n}\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ulongArrayOf(vararg elements: ULong): ULongArray = elements\n"/**\n * Copyright 2010-2019 JetBrains s.r.o.
and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license
that can be found in the license/LICENSE.txt file.\n */\n\n// Auto-generated file. DO NOT EDIT!\n\npackage
kotlin\n\nimport
kotlin.experimental.*\n\n@Suppress("NON_PUBLIC_PRIMARY_CONSTRUCTOR_OF_INLINE_CLASS")\n@
SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic inline class ULong @PublishedApi internal
constructor(@PublishedApi internal val data: Long) : Comparable<ULong> {\n\n    companion object {\n        /**\n
         * A constant holding the minimum value an instance of ULong can have.\n         */\n        public const val
MIN_VALUE: ULong = ULong(0)\n\n        /**\n         * A constant holding the maximum value an instance of
ULong can have.\n         */\n        public const val MAX_VALUE: ULong = ULong(-1)\n\n        /**\n         * The
number of bytes used to represent an instance of ULong in a binary form.\n         */\n        public const val
SIZE_BYTES: Int = 8\n\n        /**\n         * The number of bits used to represent an instance of ULong in a binary
form.\n         */\n        public const val SIZE_BITS: Int = 64\n    }\n\n    /**\n     * Compares this value with the
specified value for order.\n     * Returns zero if this value is equal to the specified other value, a negative number if
it's less than other,\n     * or a positive number if it's greater than other.\n     */\n     @kotlin.internal.InlineOnly\n
public inline operator fun compareTo(other: UByte): Int = this.compareTo(other.toULong())\n\n    /**\n     *
Compares this value with the specified value for order.\n     * Returns zero if this value is equal to the specified other
value, a negative number if it's less than other,\n     * or a positive number if it's greater than other.\n     */\n     @kotlin.internal.InlineOnly\n
public inline operator fun compareTo(other: UShort): Int =
this.compareTo(other.toULong())\n\n    /**\n     * Compares this value with the specified value for order.\n     *
Returns zero if this value is equal to the specified other value, a negative number if it's less than other,\n     * or a
positive number if it's greater than other.\n     */\n     @kotlin.internal.InlineOnly\n
public inline operator fun compareTo(other: UInt): Int = this.compareTo(other.toULong())\n\n    /**\n     * Compares this value with the
specified value for order.\n     * Returns zero if this value is equal to the specified other value, a negative number if
it's less than other,\n     * or a positive number if it's greater than other.\n     */\n     @kotlin.internal.InlineOnly\n
@Suppress("OVERRIDE_BY_INLINE")\n    public override inline operator fun compareTo(other: ULong): Int =
ulongCompare(this.data, other.data)\n\n    /**\n     * Adds the other value to this value.\n     */\n     @kotlin.internal.InlineOnly\n
public inline operator fun plus(other: UByte): ULong = this.plus(other.toULong())\n\n    /**\n     * Adds the other value to this value.\n     */\n     @kotlin.internal.InlineOnly\n
public inline operator fun plus(other:
UShort): ULong = this.plus(other.toULong())\n\n    /**\n     * Adds the other value to this value.\n     */\n     @kotlin.internal.InlineOnly\n
public inline operator fun plus(other: UInt): ULong = this.plus(other.toULong())\n\n    /**\n     * Adds the other value to this value.\n     */\n     @kotlin.internal.InlineOnly\n
public inline operator fun plus(other:
ULong): ULong = ULong(this.data.plus(other.data))\n\n    /**\n     * Subtracts the other value from this value.\n     */\n     @kotlin.internal.InlineOnly\n
public inline operator fun minus(other: UByte): ULong =
this.minus(other.toULong())\n\n    /**\n     * Subtracts the other value from this value.\n     */\n     @kotlin.internal.InlineOnly\n
public inline operator fun minus(other: UShort): ULong = this.minus(other.toULong())\n\n    /**\n     * Subtracts the other
value from this value.\n     */\n     @kotlin.internal.InlineOnly\n
public inline operator fun minus(other: UInt): ULong =

```

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this.minus(other.toULong())\n  /** Subtracts the other value from this value. *\n  @kotlin.internal.InlineOnly\n  public inline operator fun minus(other: ULong): ULong = ULong(this.data.minus(other.data))\n\n  /** Multiplies this value by the other value. *\n  @kotlin.internal.InlineOnly\n  public inline operator fun times(other: UByte): ULong = this.times(other.toULong())\n\n  /** Multiplies this value by the other value. *\n  @kotlin.internal.InlineOnly\n  public inline operator fun times(other: UShort): ULong = this.times(other.toULong())\n\n  /** Multiplies this value by the other value. *\n  @kotlin.internal.InlineOnly\n  public inline operator fun times(other: UInt): ULong = this.times(other.toULong())\n\n  /** Multiplies this value by the other value. *\n  @kotlin.internal.InlineOnly\n  public inline operator fun times(other: ULong): ULong = ULong(this.data.times(other.data))\n\n  /** Divides this value by the other value. *\n  @kotlin.internal.InlineOnly\n  public inline operator fun div(other: UByte): ULong = this.div(other.toULong())\n\n  /** Divides this value by the other value. *\n  @kotlin.internal.InlineOnly\n  public inline operator fun div(other: UShort): ULong = this.div(other.toULong())\n\n  /** Divides this value by the other value. *\n  @kotlin.internal.InlineOnly\n  public inline operator fun div(other: UInt): ULong = this.div(other.toULong())\n\n  /** Divides this value by the other value. *\n  @kotlin.internal.InlineOnly\n  public inline operator fun div(other: ULong): ULong = ulongDivide(this, other)\n\n  /** Calculates the remainder of dividing this value by the other value. *\n  @kotlin.internal.InlineOnly\n  public inline operator fun rem(other: UByte): ULong = this.rem(other.toULong())\n\n  /** Calculates the remainder of dividing this value by the other value. *\n  @kotlin.internal.InlineOnly\n  public inline operator fun rem(other: UShort): ULong = this.rem(other.toULong())\n\n  /** Calculates the remainder of dividing this value by the other value. *\n  @kotlin.internal.InlineOnly\n  public inline operator fun rem(other: UInt): ULong = this.rem(other.toULong())\n\n  /** Calculates the remainder of dividing this value by the other value. *\n  @kotlin.internal.InlineOnly\n  public inline operator fun rem(other: ULong): ULong = ulongRemainder(this, other)\n\n  /** Increments this value. *\n  @kotlin.internal.InlineOnly\n  public inline operator fun inc(): ULong = ULong(data.inc())\n\n  /** Decrements this value. *\n  @kotlin.internal.InlineOnly\n  public inline operator fun dec(): ULong = ULong(data.dec())\n\n  /** Creates a range from this value to the specified [other] value. *\n  @kotlin.internal.InlineOnly\n  public inline operator fun rangeTo(other: ULong): ULongRange = ULongRange(this, other)\n\n  /** Shifts this value left by the [bitCount] number of bits. *\n  @kotlin.internal.InlineOnly\n  public inline infix fun shl(bitCount: Int): ULong = ULong(data shl bitCount)\n\n  /** Shifts this value right by the [bitCount] number of bits, filling the leftmost bits with zeros. *\n  @kotlin.internal.InlineOnly\n  public inline infix fun shr(bitCount: Int): ULong = ULong(data ushr bitCount)\n\n  /** Performs a bitwise AND operation between the two values. *\n  @kotlin.internal.InlineOnly\n  public inline infix fun and(other: ULong): ULong = ULong(this.data and other.data)\n\n  /** Performs a bitwise OR operation between the two values. *\n  @kotlin.internal.InlineOnly\n  public inline infix fun or(other: ULong): ULong = ULong(this.data or other.data)\n\n  /** Performs a bitwise XOR operation between the two values. *\n  @kotlin.internal.InlineOnly\n  public inline infix fun xor(other: ULong): ULong = ULong(this.data xor other.data)\n\n  /** Inverts the bits in this value. *\n  @kotlin.internal.InlineOnly\n  public inline fun inv(): ULong = ULong(data.inv())\n\n  /**\n   * Converts this [ULong] value to [Byte].\n   *\n   * If this value is less than or equals to [Byte.MAX_VALUE], the resulting `Byte` value represents\n   * the same numerical value as this `ULong`.\n   *\n   * The resulting `Byte` value is represented by the least significant 8 bits of this `ULong` value.\n   *\n   * Note that the resulting `Byte` value may be negative.\n   *\n  @kotlin.internal.InlineOnly\n  public inline fun toByte(): Byte = data.toByte()\n\n  /**\n   * Converts this [ULong] value to [Short].\n   *\n   * If this value is less than or equals to [Short.MAX_VALUE], the resulting `Short` value represents\n   * the same numerical value as this `ULong`.\n   *\n   * The resulting `Short` value is represented by the least significant 16 bits of this `ULong` value.\n   *\n   * Note that the resulting `Short` value may be negative.\n   *\n  @kotlin.internal.InlineOnly\n  public inline fun toShort(): Short = data.toShort()\n\n  /**\n   * Converts this [ULong] value to [Int].\n   *\n   * If this value is less than or equals to [Int.MAX_VALUE], the resulting `Int` value represents\n   * the same numerical value as this `ULong`.\n   *\n   * The resulting `Int` value is represented by the least significant 32 bits of this `ULong` value.\n   *\n   * Note that the resulting `Int` value may be negative.\n   *\n  @kotlin.internal.InlineOnly\n  public inline fun toInt(): Int = data.toInt()\n\n  /**\n   *

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Converts this [ULong] value to [Long].\n * If this value is less than or equals to [Long.MAX_VALUE], the
resulting `Long` value represents\n * the same numerical value as this `ULong`. Otherwise the result is
negative.\n * The resulting `Long` value has the same binary representation as this `ULong` value.\n
@kotlin.internal.InlineOnly\n public inline fun toLong(): Long = data\n /**\n * Converts this [ULong]
value to [UByte].\n * If this value is less than or equals to [UByte.MAX_VALUE], the resulting `UByte`
value represents\n * the same numerical value as this `ULong`.\n * The resulting `UByte` value is
represented by the least significant 8 bits of this `ULong` value.\n */\n @kotlin.internal.InlineOnly\n public
inline fun toUByte(): UByte = data.toUByte()\n /**\n * Converts this [ULong] value to [UShort].\n * If
this value is less than or equals to [UShort.MAX_VALUE], the resulting `UShort` value represents\n * the same
numerical value as this `ULong`.\n * The resulting `UShort` value is represented by the least significant 16
bits of this `ULong` value.\n */\n @kotlin.internal.InlineOnly\n public inline fun toUShort(): UShort =
data.toUShort()\n /**\n * Converts this [ULong] value to [UInt].\n * If this value is less than or equals
to [UInt.MAX_VALUE], the resulting `UInt` value represents\n * the same numerical value as this `ULong`.\n
*\n * The resulting `UInt` value is represented by the least significant 32 bits of this `ULong` value.\n
*/\n @kotlin.internal.InlineOnly\n public inline fun toUInt(): UInt = data.toUInt()\n /** Returns this value. */\n
@kotlin.internal.InlineOnly\n public inline fun toULong(): ULong = this\n /**\n * Converts this [ULong]
value to [Float].\n * The resulting value is the closest `Float` to this `ULong` value.\n * In case when this
`ULong` value is exactly between two `Float`s,\n * the one with zero at least significant bit of mantissa is
selected.\n */\n @kotlin.internal.InlineOnly\n public inline fun toFloat(): Float = this.toDouble().toFloat()\n
/**\n * Converts this [ULong] value to [Double].\n * The resulting value is the closest `Double` to this
`ULong` value.\n * In case when this `ULong` value is exactly between two `Double`s,\n * the one with zero at
least significant bit of mantissa is selected.\n */\n @kotlin.internal.InlineOnly\n public inline fun toDouble():
Double = ulongToDouble(data)\n\n public override fun toString(): String = ulongToString(data)\n\n /**\n *
Converts this [Byte] value to [ULong].\n * If this value is positive, the resulting `ULong` value represents the
same numerical value as this `Byte`.\n * The least significant 8 bits of the resulting `ULong` value are the same
as the bits of this `Byte` value,\n * whereas the most significant 56 bits are filled with the sign bit of this value.\n
*/\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun
Byte.toULong(): ULong = ULong(this.toLong())\n /**\n * Converts this [Short] value to [ULong].\n * If this
value is positive, the resulting `ULong` value represents the same numerical value as this `Short`.\n * The least
significant 16 bits of the resulting `ULong` value are the same as the bits of this `Short` value,\n * whereas the most
significant 48 bits are filled with the sign bit of this value.\n
*/\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun
Short.toULong(): ULong = ULong(this.toLong())\n /**\n * Converts this [Int] value to [ULong].\n * If this value
is positive, the resulting `ULong` value represents the same numerical value as this `Int`.\n * The least
significant 32 bits of the resulting `ULong` value are the same as the bits of this `Int` value,\n * whereas the most
significant 32 bits are filled with the sign bit of this value.\n
*/\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun
Int.toULong(): ULong = ULong(this.toLong())\n /**\n * Converts this [Long] value to [ULong].\n * If this value
is positive, the resulting `ULong` value represents the same numerical value as this `Long`.\n * The resulting
`ULong` value has the same binary representation as this `Long` value.\n
*/\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun
Long.toULong(): ULong = ULong(this)\n /**\n * Converts this [Float] value to [ULong].\n * The fractional
part, if any, is rounded down towards zero.\n * Returns zero if this `Float` value is negative or `NaN`,
[ULong.MAX_VALUE] if it's bigger than `ULong.MAX_VALUE`.\n
*/\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun
Float.toULong(): ULong = doubleToULong(this.toDouble())\n /**\n * Converts this [Double] value to [ULong].\n
*\n * The fractional part, if any, is rounded down towards zero.\n * Returns zero if this `Double` value is negative or
`NaN`, [ULong.MAX_VALUE] if it's bigger than `ULong.MAX_VALUE`.\n
*/

```



```

*^@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^@kotlin.internal.InlineOnly^public inline fun
Double.toULong(): ULong = doubleToULong(this)^n",/*^n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin
Programming Language contributors.^n * Use of this source code is governed by the Apache 2.0 license that can be
found in the license/LICENSE.txt file.^n *^n// Auto-generated file. DO NOT EDIT!^n^package
kotlin^nn@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^public inline class
UShortArray^@Suppress("NON_PUBLIC_PRIMARY_CONSTRUCTOR_OF_INLINE_CLASS")^@Published
Api^internal constructor(@PublishedApi internal val storage: ShortArray) : Collection<UShort> {^n^ /**
Creates a new array of the specified [size], with all elements initialized to zero. *^n public constructor(size: Int) :
this(ShortArray(size))^n^ /**^n * Returns the array element at the given [index]. This method can be called
using the index operator.^n *^n * If the [index] is out of bounds of this array, throws an
[IndexOutOfBoundsExcepion] except in Kotlin/JS^n * where the behavior is unspecified.^n *^n public
operator fun get(index: Int): UShort = storage[index].toUShort()^n^ /**^n * Sets the element at the given
[index] to the given [value]. This method can be called using the index operator.^n *^n * If the [index] is out of
bounds of this array, throws an [IndexOutOfBoundsExcepion] except in Kotlin/JS^n * where the behavior is
unspecified.^n *^n public operator fun set(index: Int, value: UShort) {^n storage[index] = value.toShort()^n
}^n^ /** Returns the number of elements in the array. *^n public override val size: Int get() = storage.size^nn
/** Creates an iterator over the elements of the array. *^n public override operator fun iterator(): UShortIterator =
Iterator(storage)^nn private class Iterator(private val array: ShortArray) : UShortIterator() {^n private var
index = 0^n override fun hasNext() = index < array.size^n override fun nextUShort() = if (index <
array.size) array[index++].toUShort() else throw NoSuchElementException(index.toString())^n }^nn override
fun contains(element: UShort): Boolean {^n // TODO: Eliminate this check after KT-30016 gets fixed.^n //
Currently JS BE does not generate special bridge method for this method.^n if ((element as Any?) !is UShort)
return false^nn return storage.contains(element.toShort())^n }^nn override fun containsAll(elements:
Collection<UShort>): Boolean {^n return (elements as Collection<*>).all { it is UShort &&
storage.contains(it.toShort()) }^n }^nn override fun isEmpty(): Boolean = this.storage.size == 0^nn/**^n *
Creates a new array of the specified [size], where each element is calculated by calling the specified^nn * [init]
function.^nn * The function [init] is called for each array element sequentially starting from the first one.^nn * It
should return the value for an array element given its index.^n
*^@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^@kotlin.internal.InlineOnly^public inline fun
UShortArray(size: Int, init: (Int) -> UShort): UShortArray {^n return UShortArray(ShortArray(size) { index ->
init(index).toShort()
})^n}^nn@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^@kotlin.internal.InlineOnly^public inline fun
ushortArrayOf(vararg elements: UShort): UShortArray = elements^n",/*^n * Copyright 2010-2019 JetBrains s.r.o.
and Kotlin Programming Language contributors.^n * Use of this source code is governed by the Apache 2.0 license
that can be found in the license/LICENSE.txt file.^n
*^@file:kotlin.jvm.JvmMultifileClass^@file:kotlin.jvm.JvmName("UArraysKt")^@file:kotlin.jvm.JvmPacka
geName("kotlin.collections.unsigned")^n^package kotlin.collections^nn// NOTE: THIS FILE IS AUTO-
GENERATED by the GenerateStandardLib.kt^nn// See:
https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib^nnimport kotlin.random.*^nimport
kotlin.ranges.contains^nimport kotlin.ranges.reversed^nn/**^n * Returns 1st *element* from the array.^nn * If the
size of this array is less than 1, throws an [IndexOutOfBoundsExcepion] except in Kotlin/JS^nn * where the behavior
is unspecified.^n *^@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^@kotlin.internal.InlineOnly^public
inline operator fun UIntArray.component1(): UInt {^n return get(0)^n}^nn/**^n * Returns 1st *element* from the
array.^nn * If the size of this array is less than 1, throws an [IndexOutOfBoundsExcepion] except in Kotlin/JS^nn
* where the behavior is unspecified.^n
*^@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^@kotlin.internal.InlineOnly^public inline operator fun
ULongArray.component1(): ULong {^n return get(0)^n}^nn/**^n * Returns 1st *element* from the array.^nn * If the
size of this array is less than 1, throws an [IndexOutOfBoundsExcepion] except in Kotlin/JS^nn * where the

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behavior is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun  
UByteArray.component1(): UByte {\n return get(0)\n}\n\n/\*\*\n \* Returns 1st \*element\* from the array.\n \* \n \* If  
the size of this array is less than 1, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n \* where the  
behavior is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun  
UShortArray.component1(): UShort {\n return get(0)\n}\n\n/\*\*\n \* Returns 2nd \*element\* from the array.\n \* \n \*  
If the size of this array is less than 2, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n \* where the  
behavior is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun  
UIntArray.component2(): UInt {\n return get(1)\n}\n\n/\*\*\n \* Returns 2nd \*element\* from the array.\n \* \n \* If  
the size of this array is less than 2, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n \* where the  
behavior is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun  
ULongArray.component2(): ULong {\n return get(1)\n}\n\n/\*\*\n \* Returns 2nd \*element\* from the array.\n \* \n \*  
If the size of this array is less than 2, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n \* where the  
behavior is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun  
UByteArray.component2(): UByte {\n return get(1)\n}\n\n/\*\*\n \* Returns 2nd \*element\* from the array.\n \* \n \*  
If the size of this array is less than 2, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n \* where the  
behavior is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun  
UShortArray.component2(): UShort {\n return get(1)\n}\n\n/\*\*\n \* Returns 3rd \*element\* from the array.\n \* \n \*  
If the size of this array is less than 3, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n \* where the  
behavior is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun  
UIntArray.component3(): UInt {\n return get(2)\n}\n\n/\*\*\n \* Returns 3rd \*element\* from the array.\n \* \n \* If  
the size of this array is less than 3, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n \* where the  
behavior is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun  
ULongArray.component3(): ULong {\n return get(2)\n}\n\n/\*\*\n \* Returns 3rd \*element\* from the array.\n \* \n \*  
If the size of this array is less than 3, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n \* where the  
behavior is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun  
UByteArray.component3(): UByte {\n return get(2)\n}\n\n/\*\*\n \* Returns 3rd \*element\* from the array.\n \* \n \*  
If the size of this array is less than 3, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n \* where the  
behavior is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun  
UShortArray.component3(): UShort {\n return get(2)\n}\n\n/\*\*\n \* Returns 4th \*element\* from the array.\n \* \n \*  
If the size of this array is less than 4, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n \* where the  
behavior is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun  
UIntArray.component4(): UInt {\n return get(3)\n}\n\n/\*\*\n \* Returns 4th \*element\* from the array.\n \* \n \* If  
the size of this array is less than 4, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n \* where the behavior  
is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic  
inline operator fun ULongArray.component4(): ULong {\n return get(3)\n}\n\n/\*\*\n \* Returns 4th \*element\* from  
the array.\n \* \n \* If the size of this array is less than 4, throws an [IndexOutOfBoundsException] except in  
Kotlin/JS\n \* where the behavior is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun  
UByteArray.component4(): UByte {\n return get(3)\n}\n\n/\*\*\n \* Returns 4th \*element\* from the array.\n \* \n \*  
If the size of this array is less than 4, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n \* where the  
behavior is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun  
UShortArray.component4(): UShort {\n return get(3)\n}\n\n/\*\*\n \* Returns 5th \*element\* from the array.\n \* \n \*  
If the size of this array is less than 5, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n \* where the  
behavior is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun  
UIntArray.component5(): UInt {\n return get(4)\n}\n\n/\*\*\n \* Returns 5th \*element\* from the array.\n \* \n \*  
If the size of this array is less than 5, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n \* where the behavior  
is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic  
inline operator fun  
ULongArray.component5(): ULong {\n return get(4)\n}\n\n/\*\*\n \* Returns 5th \*element\* from  
the array.\n \* \n \*  
If the size of this array is less than 5, throws an [IndexOutOfBoundsException] except in  
Kotlin/JS\n \* where the behavior is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun  
UByteArray.component5(): UByte {\n return get(4)\n}\n\n/\*\*\n \* Returns 5th \*element\* from the array.\n \* \n \*  
If the size of this array is less than 5, throws an [IndexOutOfBoundsException] except in Kotlin/JS\n \* where the  
behavior is unspecified.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun  
UShortArray.component5(): UShort {\n return get(4)\n}\n\n/\*\*\n \* Returns an element at the given [index] or  
throws an [IndexOutOfBoundsException] if the [index] is out of bounds of this array.\n \* \n \*  
@sample  
samples.collections.Collections.Elements.elementAt\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic expect fun  
UIntArray.elementAt(index: Int):  
UInt\n\n/\*\*\n \* Returns an element at the given [index] or throws an [IndexOutOfBoundsException] if the [index] is  
out of bounds of this array.\n \* \n \*  
@sample  
samples.collections.Collections.Elements.elementAt\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic expect fun  
ULongArray.elementAt(index: Int):  
ULong\n\n/\*\*\n \* Returns an element at the given [index] or throws an [IndexOutOfBoundsException] if the [index]  
is out of bounds of this array.\n \* \n \*  
@sample  
samples.collections.Collections.Elements.elementAt\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic expect fun  
UByteArray.elementAt(index: Int):  
UByte\n\n/\*\*\n \* Returns an element at the given [index] or throws an [IndexOutOfBoundsException] if the [index]  
is out of bounds of this array.\n \* \n \*  
@sample  
samples.collections.Collections.Elements.elementAt\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic expect fun  
UShortArray.elementAt(index: Int):  
UShort\n\n/\*\*\n \* Returns an element at the given [index] or the result of calling the [defaultValue] function if the  
[index] is out of bounds of this array.\n \* \n \*  
@sample  
samples.collections.Collections.Elements.elementAtOrElse\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun  
UIntArray.elementAtOrElse(index: Int, defaultValue: (Int) -> UInt): UInt {\n return if (index >= 0 && index <=  
lastIndex) get(index) else defaultValue(index)\n}\n\n/\*\*\n \* Returns an element at the given [index] or the result of  
calling the [defaultValue] function if the [index] is out of bounds of this array.\n \* \n \*  
@sample  
samples.collections.Collections.Elements.elementAtOrElse\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun  
ULongArray.elementAtOrElse(index: Int, defaultValue: (Int) -> ULong): ULong {\n return if (index >= 0 &&  
index <= lastIndex) get(index) else defaultValue(index)\n}\n\n/\*\*\n \* Returns an element at the given [index] or the  
result of calling the [defaultValue] function if the [index] is out of bounds of this array.\n \* \n \*  
@sample  
samples.collections.Collections.Elements.elementAtOrElse\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun  
UByteArray.elementAtOrElse(index: Int, defaultValue: (Int) -> UByte): UByte {\n return if (index >= 0 && index

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<= lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or the result
of calling the [defaultValue] function if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrElse\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.elementAtOrElse(index: Int, defaultValue: (Int) -> UShort): UShort {\n    return if (index >= 0 &&
index <= lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or
`null` if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.elementAtOrNull(index: Int): UInt? {\n    return this.getOrNull(index)\n}\n\n/**\n * Returns an element
at the given [index] or `null` if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.elementAtOrNull(index: Int): ULong? {\n    return this.getOrNull(index)\n}\n\n/**\n * Returns an
element at the given [index] or `null` if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.elementAtOrNull(index: Int): UByte? {\n    return this.getOrNull(index)\n}\n\n/**\n * Returns an
element at the given [index] or `null` if the [index] is out of bounds of this array.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.elementAtOrNull(index: Int): UShort? {\n    return this.getOrNull(index)\n}\n\n/**\n * Returns the
first element matching the given [predicate], or `null` if no such element was found.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.find(predicate: (UInt) -> Boolean): UInt? {\n    return firstOrNull(predicate)\n}\n\n/**\n * Returns the
first element matching the given [predicate], or `null` if no such element was found.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.find(predicate: (ULong) -> Boolean): ULong? {\n    return firstOrNull(predicate)\n}\n\n/**\n *
Returns the first element matching the given [predicate], or `null` if no such element was found.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.find(predicate: (UByte) -> Boolean): UByte? {\n    return firstOrNull(predicate)\n}\n\n/**\n * Returns
the first element matching the given [predicate], or `null` if no such element was found.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.find(predicate: (UShort) -> Boolean): UShort? {\n    return firstOrNull(predicate)\n}\n\n/**\n *
Returns the last element matching the given [predicate], or `null` if no such element was found.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.findLast(predicate: (UInt) -> Boolean): UInt? {\n    return lastOrNull(predicate)\n}\n\n/**\n * Returns the
last element matching the given [predicate], or `null` if no such element was found.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.findLast(predicate: (ULong) -> Boolean): ULong? {\n    return lastOrNull(predicate)\n}\n\n/**\n *
Returns the last element matching the given [predicate], or `null` if no such element was found.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.findLast(predicate: (UByte) -> Boolean): UByte? {\n    return lastOrNull(predicate)\n}\n\n/**\n *
Returns the last element matching the given [predicate], or `null` if no such element was found.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.findLast(predicate: (UShort) -> Boolean): UShort? {\n    return lastOrNull(predicate)\n}\n\n/**\n *
Returns first element.\n * @throws [NoSuchElementException] if the array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun

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UIntArray.first(): UInt {
    return storage.first().toUInt()
}
Returns first element.
@throws [NoSuchElementException] if the array is empty.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
ULongArray.first(): ULong {
    return storage.first().toULong()
}
Returns first element.
@throws [NoSuchElementException] if the array is empty.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UByteArray.first(): UByte {
    return storage.first().toUByte()
}
Returns first element.
@throws [NoSuchElementException] if the array is empty.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UShortArray.first(): UShort {
    return storage.first().toUShort()
}
Returns the first element matching the given [predicate].
@throws [NoSuchElementException] if no such element is found.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UIntArray.first(predicate: (UInt) -> Boolean): UInt {
    for (element in this) if (predicate(element)) return element
    throw NoSuchElementException("Array contains no element matching the predicate.")
}
Returns the first element matching the given [predicate].
@throws [NoSuchElementException] if no such element is found.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
ULongArray.first(predicate: (ULong) -> Boolean): ULong {
    for (element in this) if (predicate(element)) return element
    throw NoSuchElementException("Array contains no element matching the predicate.")
}
Returns the first element matching the given [predicate].
@throws [NoSuchElementException] if no such element is found.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UByteArray.first(predicate: (UByte) -> Boolean): UByte {
    for (element in this) if (predicate(element)) return element
    throw NoSuchElementException("Array contains no element matching the predicate.")
}
Returns the first element matching the given [predicate].
@throws [NoSuchElementException] if no such element is found.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UShortArray.first(predicate: (UShort) -> Boolean): UShort {
    for (element in this) if (predicate(element)) return element
    throw NoSuchElementException("Array contains no element matching the predicate.")
}
Returns the first element, or `null` if the array is empty.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun UIntArray.firstOrNull(): UInt? {
    return if (isEmpty()) null else this[0]
}
Returns the first element, or `null` if the array is empty.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun ULongArray.firstOrNull(): ULong? {
    return if (isEmpty()) null else this[0]
}
Returns the first element, or `null` if the array is empty.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun UByteArray.firstOrNull(): UByte? {
    return if (isEmpty()) null else this[0]
}
Returns the first element, or `null` if the array is empty.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun UShortArray.firstOrNull(): UShort? {
    return if (isEmpty()) null else this[0]
}
Returns the first element matching the given [predicate], or `null` if element was not found.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UIntArray.firstOrNull(predicate: (UInt) -> Boolean): UInt? {
    for (element in this) if (predicate(element)) return element
    return null
}
Returns the first element matching the given [predicate], or `null` if element was not found.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
ULongArray.firstOrNull(predicate: (ULong) -> Boolean): ULong? {
    for (element in this) if (predicate(element)) return element
    return null
}
Returns the first element matching the given [predicate], or `null` if element was not found.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UByteArray.firstOrNull(predicate: (UByte) -> Boolean): UByte? {
    for (element in this) if (predicate(element))

```

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return element\n    return null\n}\n\n/**\n * Returns the first element matching the given [predicate], or `null` if
element was not found.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.firstOrNull(predicate: (UShort) -> Boolean): UShort? {\n    for (element in this) if (predicate(element))
return element\n    return null\n}\n\n/**\n * Returns an element at the given [index] or the result of calling the
[defaultValue] function if the [index] is out of bounds of this array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.getOrElse(index: Int, defaultValue: (Int) -> UInt): UInt {\n    return if (index >= 0 && index <=
lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or the result of
calling the [defaultValue] function if the [index] is out of bounds of this array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.getOrElse(index: Int, defaultValue: (Int) -> ULong): ULong {\n    return if (index >= 0 && index <=
lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or the result of
calling the [defaultValue] function if the [index] is out of bounds of this array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.getOrElse(index: Int, defaultValue: (Int) -> UByte): UByte {\n    return if (index >= 0 && index <=
lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or `null` if the
[index] is out of bounds of this array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.getOrElse(index: Int, defaultValue: (Int) -> UShort): UShort {\n    return if (index >= 0 && index <=
lastIndex) get(index) else defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or `null` if the
[index] is out of bounds of this array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
UIntArray.getOrNull(index: Int): UInt? {\n    return if (index >= 0 && index <= lastIndex) get(index) else
null\n}\n\n/**\n * Returns an element at the given [index] or `null` if the [index] is out of bounds of this array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
ULongArray.getOrNull(index: Int):
ULong? {\n    return if (index >= 0 && index <= lastIndex) get(index) else null\n}\n\n/**\n * Returns an element at
the given [index] or `null` if the [index] is out of bounds of this array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
UByteArray.getOrNull(index: Int): UByte?
{\n    return if (index >= 0 && index <= lastIndex) get(index) else null\n}\n\n/**\n * Returns an element at the
given [index] or `null` if the [index] is out of bounds of this array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
UShortArray.getOrNull(index: Int):
UShort? {\n    return if (index >= 0 && index <= lastIndex) get(index) else null\n}\n\n/**\n * Returns first index of
[element], or -1 if the array does not contain element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.indexOf(element: UInt): Int {\n    return storage.indexOf(element.toInt())\n}\n\n/**\n * Returns first
index of [element], or -1 if the array does not contain element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.indexOf(element: ULong): Int {\n    return storage.indexOf(element.toLong())\n}\n\n/**\n * Returns
first index of [element], or -1 if the array does not contain element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.indexOf(element: UByte): Int {\n    return storage.indexOf(element.toByte())\n}\n\n/**\n * Returns
first index of [element], or -1 if the array does not contain element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.indexOf(element: UShort): Int {\n    return storage.indexOf(element.toShort())\n}\n\n/**\n * Returns
index of the first element matching the given [predicate], or -1 if the array does not contain such element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.indexOfFirst(predicate: (UInt) -> Boolean): Int {\n    return storage.indexOfFirst { predicate(it.toUInt())
}\n}\n\n/**\n * Returns index of the first element matching the given [predicate], or -1 if the array does not contain

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such element.\n *\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic
inline fun ULongArray.indexOfFirst(predicate: (ULong) -> Boolean): Int {\n    return storage.indexOfFirst {
predicate(it.toULong()) }\n}\n\n/**\n * Returns index of the first element matching the given [predicate], or -1 if the
array does not contain such element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.indexOfFirst(predicate: (UByte) -> Boolean): Int {\n    return storage.indexOfFirst {
predicate(it.toUByte()) }\n}\n\n/**\n * Returns index of the first element matching the given [predicate], or -1 if the
array does not contain such element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.indexOfFirst(predicate: (UShort) -> Boolean): Int {\n    return storage.indexOfFirst {
predicate(it.toUShort()) }\n}\n\n/**\n * Returns index of the last element matching the given [predicate], or -1 if the
array does not contain such element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.indexOfLast(predicate: (UInt) -> Boolean): Int {\n    return storage.indexOfLast { predicate(it.toUInt())
}\n}\n\n/**\n * Returns index of the last element matching the given [predicate], or -1 if the array does not contain
such element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic
inline fun ULongArray.indexOfLast(predicate: (ULong) -> Boolean): Int {\n    return storage.indexOfLast {
predicate(it.toULong()) }\n}\n\n/**\n * Returns index of the last element matching the given [predicate], or -1 if the
array does not contain such element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.indexOfLast(predicate: (UByte) -> Boolean): Int {\n    return storage.indexOfLast {
predicate(it.toUByte()) }\n}\n\n/**\n * Returns index of the last element matching the given [predicate], or -1 if the
array does not contain such element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.indexOfLast(predicate: (UShort) -> Boolean): Int {\n    return storage.indexOfLast {
predicate(it.toUShort()) }\n}\n\n/**\n * Returns the last element.\n * @throws [NoSuchElementException] if the
array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic
inline fun UIntArray.last(): UInt {\n    return storage.last().toUInt()\n}\n\n/**\n * Returns the last element.\n *
@throws [NoSuchElementException] if the array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.last(): ULong {\n    return storage.last().toULong()\n}\n\n/**\n * Returns the last element.\n *
@throws [NoSuchElementException] if the array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.last(): UByte {\n    return storage.last().toUByte()\n}\n\n/**\n * Returns the last element.\n * @throws
[NoSuchElementException] if the array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.last(): UShort {\n    return storage.last().toUShort()\n}\n\n/**\n * Returns the last element matching
the given [predicate].\n * @throws [NoSuchElementException] if no such element is found.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.last(predicate: (UInt) -> Boolean): UInt {\n    for (index in this.indices.reversed()) {\n        val element =
this[index]\n        if (predicate(element)) return element\n    }\n    throw NoSuchElementException("Array contains
no element matching the predicate.")\n}\n\n/**\n * Returns the last element matching the given [predicate].\n *
@throws [NoSuchElementException] if no such element is found.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.last(predicate: (ULong) -> Boolean): ULong {\n    for (index in this.indices.reversed()) {\n        val
element = this[index]\n        if (predicate(element)) return element\n    }\n    throw
NoSuchElementException("Array contains no element matching the predicate.")\n}\n\n/**\n * Returns the last
element matching the given [predicate].\n * @throws [NoSuchElementException] if no such element is found.\n

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*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.last(predicate: (UByte) -> Boolean): UByte {\n  for (index in this.indices.reversed()) {\n    val
element = this[index]\n    if (predicate(element)) return element\n  }\n  throw
NoSuchElementException("Array contains no element matching the predicate.")\n}\n\n/**\n * Returns the last
element matching the given [predicate].\n * @throws [NoSuchElementException] if no such element is found.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.last(predicate: (UShort) -> Boolean): UShort {\n  for (index in this.indices.reversed()) {\n    val
element = this[index]\n    if (predicate(element)) return element\n  }\n  throw
NoSuchElementException("Array contains no element matching the predicate.")\n}\n\n/**\n * Returns last index
of [element], or -1 if the array does not contain element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.lastIndexOf(element: UInt): Int {\n  return storage.lastIndexOf(element.toInt())\n}\n\n/**\n * Returns
last index of [element], or -1 if the array does not contain element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.lastIndexOf(element: ULong): Int {\n  return storage.lastIndexOf(element.toLong())\n}\n\n/**\n *
Returns last index of [element], or -1 if the array does not contain element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.lastIndexOf(element: UByte): Int {\n  return storage.lastIndexOf(element.toByte())\n}\n\n/**\n *
Returns last index of [element], or -1 if the array does not contain element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.lastIndexOf(element: UShort): Int {\n  return storage.lastIndexOf(element.toShort())\n}\n\n/**\n *
Returns the last element, or `null` if the array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.lastOrNull(): UInt? {\n  return
if (isEmpty()) null else this[size - 1]\n}\n\n/**\n * Returns the last element, or `null` if the array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.lastOrNull(): ULong? {\n  return
if (isEmpty()) null else this[size - 1]\n}\n\n/**\n * Returns the last element, or `null` if the array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.lastOrNull(): UByte? {\n  return
if (isEmpty()) null else this[size - 1]\n}\n\n/**\n * Returns the last element, or `null` if the array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.lastOrNull(): UShort? {\n  return
if (isEmpty()) null else this[size - 1]\n}\n\n/**\n * Returns the last element matching the given [predicate], or
`null` if no such element was found.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.lastOrNull(predicate: (UInt) -> Boolean): UInt? {\n  for (index in this.indices.reversed()) {\n    val
element = this[index]\n    if (predicate(element)) return element\n  }\n  return null\n}\n\n/**\n * Returns the last
element matching the given [predicate], or `null` if no such element was found.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.lastOrNull(predicate: (ULong) -> Boolean): ULong? {\n  for (index in this.indices.reversed()) {\n    val
element = this[index]\n    if (predicate(element)) return element\n  }\n  return null\n}\n\n/**\n * Returns the
last element matching the given [predicate], or `null` if no such element was found.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.lastOrNull(predicate: (UByte) -> Boolean): UByte? {\n  for (index in this.indices.reversed()) {\n    val
element = this[index]\n    if (predicate(element)) return element\n  }\n  return null\n}\n\n/**\n * Returns the
last element matching the given [predicate], or `null` if no such element was found.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.lastOrNull(predicate: (UShort) -> Boolean): UShort? {\n  for (index in this.indices.reversed()) {\n    val
element = this[index]\n    if (predicate(element)) return element\n  }\n  return null\n}\n\n/**\n * Returns a
random element from this array.\n * \n * @throws NoSuchElementException if this array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun

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UIntArray.random(): UInt {\n  return random(Random)\n}\n\n/**\n * Returns a random element from this array.\n * \n * @throws NoSuchElementException if this array is empty.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.random(): ULong {\n  return random(Random)\n}\n\n/**\n * Returns a random element from this
array.\n * \n * @throws NoSuchElementException if this array is empty.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.random(): UByte {\n  return random(Random)\n}\n\n/**\n * Returns a random element from this
array.\n * \n * @throws NoSuchElementException if this array is empty.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.random(): UShort {\n  return random(Random)\n}\n\n/**\n * Returns a random element from this
array using the specified source of randomness.\n * \n * @throws NoSuchElementException if this array is empty.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.random(random: Random): UInt
{\n  if (isEmpty())\n    throw NoSuchElementException("Array is empty.")\n  return
get(random.nextInt(size))\n}\n\n/**\n * Returns a random element from this array using the specified source of
randomness.\n * \n * @throws NoSuchElementException if this array is empty.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.random(random: Random):
ULong {\n  if (isEmpty())\n    throw NoSuchElementException("Array is empty.")\n  return
get(random.nextInt(size))\n}\n\n/**\n * Returns a random element from this array using the specified source of
randomness.\n * \n * @throws NoSuchElementException if this array is empty.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.random(random: Random):
UByte {\n  if (isEmpty())\n    throw NoSuchElementException("Array is empty.")\n  return
get(random.nextInt(size))\n}\n\n/**\n * Returns a random element from this array using the specified source of
randomness.\n * \n * @throws NoSuchElementException if this array is empty.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.random(random: Random):
UShort {\n  if (isEmpty())\n    throw NoSuchElementException("Array is empty.")\n  return
get(random.nextInt(size))\n}\n\n/**\n * Returns a random element from this array, or `null` if this array is empty.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\npublic inline fun UIntArray.randomOrNull(): UInt? {\n  return randomOrNull(Random)\n}\n\n/**\n * Returns a
random element from this array, or `null` if this array is empty.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\npublic inline fun ULongArray.randomOrNull(): ULong? {\n  return randomOrNull(Random)\n}\n\n/**\n *
Returns a random element from this array, or `null` if this array is empty.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\npublic inline fun UByteArray.randomOrNull(): UByte? {\n  return randomOrNull(Random)\n}\n\n/**\n *
Returns a random element from this array, or `null` if this array is empty.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\npublic inline fun UShortArray.randomOrNull(): UShort? {\n  return randomOrNull(Random)\n}\n\n/**\n *
Returns a random element from this array using the specified source of randomness, or `null` if this array is empty.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\npublic fun
UIntArray.randomOrNull(random: Random): UInt? {\n  if (isEmpty())\n    return null\n  return
get(random.nextInt(size))\n}\n\n/**\n * Returns a random element from this array using the specified source of
randomness, or `null` if this array is empty.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\npublic fun
ULongArray.randomOrNull(random: Random): ULong? {\n  if (isEmpty())\n    return null\n  return
get(random.nextInt(size))\n}\n\n/**\n * Returns a random element from this array using the specified source of
randomness, or `null` if this array is empty.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\npublic fun
UByteArray.randomOrNull(random: Random): UByte? {\n  if (isEmpty())\n    return null\n  return

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get(random.nextInt(size))\n}\n\n/**\n * Returns a random element from this array using the specified source of
randomness, or `null` if this array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\npublic fun
UShortArray.randomOrNull(random: Random): UShort? {\n    if (isEmpty())\n        return null\n    return
get(random.nextInt(size))\n}\n\n/**\n * Returns the single element, or throws an exception if the array is empty or
has more than one element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.single(): UInt {\n    return storage.single().toUInt()\n}\n\n/**\n * Returns the single element, or throws an
exception if the array is empty or has more than one element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.single(): ULong {\n    return storage.single().toULong()\n}\n\n/**\n * Returns the single element, or
throws an exception if the array is empty or has more than one element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.single(): UByte {\n    return storage.single().toUByte()\n}\n\n/**\n * Returns the single element, or
throws an exception if the array is empty or has more than one element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.single(): UShort {\n    return storage.single().toUShort()\n}\n\n/**\n * Returns the single element
matching the given [predicate], or throws exception if there is no or more than one matching element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.single(predicate: (UInt) -> Boolean): UInt {\n    var single: UInt? = null\n    var found = false\n    for
(element in this) {\n        if (predicate(element)) {\n            if (found) throw IllegalArgumentException("Array
contains more than one matching element.")\n            single = element\n            found = true\n        }\n    }
if (!found) throw NoSuchElementException("Array contains no element matching the predicate.")\n    @Suppress("UNCHECKED_CAST")\n    return single as UInt\n}\n\n/**\n * Returns the single element matching
the given [predicate], or throws exception if there is no or more than one matching element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.single(predicate: (ULong) -> Boolean): ULong {\n    var single: ULong? = null\n    var found = false\n
for (element in this) {\n        if (predicate(element)) {\n            if (found) throw IllegalArgumentException("Array
contains more than one matching element.")\n            single = element\n            found = true\n        }\n    }
if (!found) throw NoSuchElementException("Array contains no element matching the predicate.")\n    @Suppress("UNCHECKED_CAST")\n    return single as ULong\n}\n\n/**\n * Returns the single element
matching the given [predicate], or throws exception if there is no or more than one matching element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.single(predicate: (UByte) -> Boolean): UByte {\n    var single: UByte? = null\n    var found = false\n
for (element in this) {\n        if (predicate(element)) {\n            if (found) throw IllegalArgumentException("Array
contains more than one matching element.")\n            single = element\n            found = true\n        }\n    }
if (!found) throw NoSuchElementException("Array contains no element matching the predicate.")\n    @Suppress("UNCHECKED_CAST")\n    return single as UByte\n}\n\n/**\n * Returns the single element
matching the given [predicate], or throws exception if there is no or more than one matching element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.single(predicate: (UShort) -> Boolean): UShort {\n    var single: UShort? = null\n    var found = false\n
for (element in this) {\n        if (predicate(element)) {\n            if (found) throw IllegalArgumentException("Array
contains more than one matching element.")\n            single = element\n            found = true\n        }\n    }
if (!found) throw NoSuchElementException("Array contains no element matching the predicate.")\n    @Suppress("UNCHECKED_CAST")\n    return single as UShort\n}\n\n/**\n * Returns single element, or `null` if
the array is empty or has more than one element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.singleOrNull(): UInt? {\n    return if (size == 1) this[0] else null\n}\n\n/**\n * Returns single element, or `null` if the array is empty or has more

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than one element.\n *^@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
UByteArray.singleOrNull(): ULong? {\n    return if (size == 1) this[0] else null\n}\n\n/**\n * Returns single
element, or `null` if the array is empty or has more than one element.\n
*^@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.singleOrNull(): UByte? {\n
return if (size == 1) this[0] else null\n}\n\n/**\n * Returns single element, or `null` if the array is empty or has more
than one element.\n *^@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
UShortArray.singleOrNull(): UShort? {\n    return if (size == 1) this[0] else null\n}\n\n/**\n * Returns the single
element matching the given [predicate], or `null` if element was not found or more than one element was found.\n
*^@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.singleOrNull(predicate: (UInt) -> Boolean): UInt? {\n    var single: UInt? = null\n    var found = false\n
for (element in this) {\n        if (predicate(element)) {\n            if (found) return null\n            single = element\n
found = true\n        }\n    }\n    if (!found) return null\n    return single\n}\n\n/**\n * Returns the single element
matching the given [predicate], or `null` if element was not found or more than one element was found.\n
*^@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.singleOrNull(predicate: (UByte) -> Boolean): UByte? {\n    var single: UByte? = null\n    var found
= false\n    for (element in this) {\n        if (predicate(element)) {\n            if (found) return null\n            single =
element\n            found = true\n        }\n    }\n    if (!found) return null\n    return single\n}\n\n/**\n * Returns the
single element matching the given [predicate], or `null` if element was not found or more than one element was
found.\n *^@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline
fun UShortArray.singleOrNull(predicate: (UShort) -> Boolean): UShort? {\n    var single: UShort? = null\n    var
found = false\n    for (element in this) {\n        if (predicate(element)) {\n            if (found) return null\n            single
= element\n            found = true\n        }\n    }\n    if (!found) return null\n    return single\n}\n\n/**\n * Returns a list
containing all elements except first [n] elements.\n * \n * @throws IllegalArgumentException if [n] is negative.\n *
\n * @sample samples.collections.Collections.Transformations.drop\n
*^@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.drop(n: Int): List<UInt> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n    return takeLast((size -
n).coerceAtLeast(0))\n}\n\n/**\n * Returns a list containing all elements except first [n] elements.\n * \n * @throws
IllegalArgumentException if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.drop\n
*^@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.drop(n: Int): List<ULong> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n    return takeLast((size -
n).coerceAtLeast(0))\n}\n\n/**\n * Returns a list containing all elements except first [n] elements.\n * \n * @throws
IllegalArgumentException if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.drop\n
*^@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.drop(n: Int): List<UByte> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n    return takeLast((size -
n).coerceAtLeast(0))\n}\n\n/**\n * Returns a list containing all elements except first [n] elements.\n * \n * @throws
IllegalArgumentException if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.drop\n
*^@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.drop(n: Int): List<UShort> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n    return takeLast((size -
n).coerceAtLeast(0))\n}\n\n/**\n * Returns a list containing all elements except last [n] elements.\n * \n * @throws
IllegalArgumentException if [n] is negative.\n * \n * @sample

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samples.collections.Collections.Transformations.drop\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.dropLast(n: Int): List<UInt> {\n
require(n >= 0) { \"Requested element count $n is less than zero.\" }\n return take((size -
n).coerceAtLeast(0))\n}\n\n**\n * Returns a list containing all elements except last [n] elements.\n * \n * @throws
IllegalArgumentException if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.drop\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.dropLast(n: Int):
List<ULong> {\n require(n >= 0) { \"Requested element count $n is less than zero.\" }\n return take((size -
n).coerceAtLeast(0))\n}\n\n**\n * Returns a list containing all elements except last [n] elements.\n * \n * @throws
IllegalArgumentException if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.drop\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.dropLast(n: Int): List<UByte>
{\n require(n >= 0) { \"Requested element count $n is less than zero.\" }\n return take((size -
n).coerceAtLeast(0))\n}\n\n**\n * Returns a list containing all elements except last [n] elements.\n * \n * @throws
IllegalArgumentException if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.drop\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.dropLast(n: Int):
List<UShort> {\n require(n >= 0) { \"Requested element count $n is less than zero.\" }\n return take((size -
n).coerceAtLeast(0))\n}\n\n**\n * Returns a list containing all elements except last elements that satisfy the given
[predicate].\n * \n * @sample samples.collections.Collections.Transformations.drop\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.dropLastWhile(predicate: (UInt) -> Boolean): List<UInt> {\n for (index in lastIndex downTo 0) {\n
if (!predicate(this[index])) {\n return take(index + 1)\n } }\n return emptyList()\n}\n\n**\n *
Returns a list containing all elements except last elements that satisfy the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.drop\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.dropLastWhile(predicate: (ULong) -> Boolean): List<ULong> {\n for (index in lastIndex downTo 0)
{\n if (!predicate(this[index])) {\n return take(index + 1)\n } }\n return emptyList()\n}\n\n**\n *
Returns a list containing all elements except last elements that satisfy the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.drop\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.dropLastWhile(predicate: (UByte) -> Boolean): List<UByte> {\n for (index in lastIndex downTo 0)
{\n if (!predicate(this[index])) {\n return take(index + 1)\n } }\n return emptyList()\n}\n\n**\n *
Returns a list containing all elements except last elements that satisfy the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.drop\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.dropLastWhile(predicate: (UShort) -> Boolean): List<UShort> {\n for (index in lastIndex downTo
0) {\n if (!predicate(this[index])) {\n return take(index + 1)\n } }\n return
emptyList()\n}\n\n**\n * Returns a list containing all elements except first elements that satisfy the given
[predicate].\n * \n * @sample samples.collections.Collections.Transformations.drop\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.dropWhile(predicate: (UInt) -> Boolean): List<UInt> {\n var yielding = false\n val list =
ArrayList<UInt>()\n for (item in this)\n if (yielding)\n list.add(item)\n else if (!predicate(item)) {\n
list.add(item)\n yielding = true\n }\n return list\n}\n\n**\n * Returns a list containing all
elements except first elements that satisfy the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.drop\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.dropWhile(predicate: (ULong) -> Boolean): List<ULong> {\n var yielding = false\n val list =

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ArrayList<ULong>()\n for (item in this)\n     if (yielding)\n         list.add(item)\n     else if (!predicate(item))\n         list.add(item)\n     yielding = true\n }\n return list\n}\n\n/**\n * Returns a list containing all\n elements except first elements that satisfy the given [predicate].\n *\n * @sample\n samples.collections.Collections.Transformations.drop\n\n *\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun\n UByteArray.dropWhile(predicate: (UByte) -> Boolean): List<UByte> {\n     var yielding = false\n     val list =\n ArrayList<UByte>()\n     for (item in this)\n         if (yielding)\n             list.add(item)\n         else if (!predicate(item))\n             list.add(item)\n         yielding = true\n     }\n     return list\n}\n\n/**\n * Returns a list containing all\n elements except first elements that satisfy the given [predicate].\n *\n * @sample\n samples.collections.Collections.Transformations.drop\n\n *\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun\n UShortArray.dropWhile(predicate: (UShort) -> Boolean): List<UShort> {\n     var yielding = false\n     val list =\n ArrayList<UShort>()\n     for (item in this)\n         if (yielding)\n             list.add(item)\n         else if (!predicate(item))\n             list.add(item)\n         yielding = true\n     }\n     return list\n}\n\n/**\n * Returns a list containing only\n elements matching the given [predicate].\n\n *\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun\n UIntArray.filter(predicate: (UInt) -> Boolean): List<UInt> {\n     return filterTo(ArrayList<UInt>(),\n predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n\n *\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun\n ULongArray.filter(predicate: (ULong) -> Boolean): List<ULong> {\n     return filterTo(ArrayList<ULong>(),\n predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n\n *\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun\n UByteArray.filter(predicate: (UByte) -> Boolean): List<UByte> {\n     return filterTo(ArrayList<UByte>(),\n predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n\n *\n * @param\n [predicate] function that takes the index of an element and the element itself\n * and returns the result of predicate\n evaluation on the element.\n\n *\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun\n UIntArray.filterIndexed(predicate: (index: Int, UInt) -> Boolean): List<UInt> {\n     return\n filterIndexedTo(ArrayList<UInt>(), predicate)\n}\n\n/**\n * Returns a list containing only elements matching the\n given [predicate].\n *\n * @param [predicate] function that takes the index of an element and the element itself\n * and\n returns the result of predicate evaluation on the element.\n\n *\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun\n ULongArray.filterIndexed(predicate: (index: Int, ULong) -> Boolean): List<ULong> {\n     return\n filterIndexedTo(ArrayList<ULong>(), predicate)\n}\n\n/**\n * Returns a list containing only elements matching the\n given [predicate].\n *\n * @param [predicate] function that takes the index of an element and the element itself\n * and\n returns the result of predicate evaluation on the element.\n\n *\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun\n UByteArray.filterIndexed(predicate: (index: Int, UByte) -> Boolean): List<UByte> {\n     return\n filterIndexedTo(ArrayList<UByte>(), predicate)\n}\n\n/**\n * Returns a list containing only elements matching the\n given [predicate].\n *\n * @param [predicate] function that takes the index of an element and the element itself\n * and\n returns the result of predicate evaluation on the element.\n\n *\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun\n UShortArray.filterIndexed(predicate: (index: Int, UShort) -> Boolean): List<UShort> {\n     return\n filterIndexedTo(ArrayList<UShort>(), predicate)\n}\n\n/**\n * Appends all elements matching the given [predicate]\n to the given [destination].\n *\n * @param [predicate] function that takes the index of an element and the element

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itself\n \* and returns the result of predicate evaluation on the element.\n

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*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <C : MutableCollection<in UInt>> UIntArray.filterIndexedTo(destination: C, predicate: (index: Int, UInt) -> Boolean): C {\n    forEachIndexed { index, element ->\n        if (predicate(index, element)) destination.add(element)\n    }\n    return destination\n}\n\n/**\n * Appends all elements matching the given [predicate] to the given [destination].\n * @param [predicate] function that takes the index of an element and the element itself\n * and returns the result of predicate evaluation on the element.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <C : MutableCollection<in ULong>> ULongArray.filterIndexedTo(destination: C, predicate: (index: Int, ULong) -> Boolean): C {\n    forEachIndexed { index, element ->\n        if (predicate(index, element))\n            destination.add(element)\n    }\n    return destination\n}\n\n/**\n * Appends all elements matching the given [predicate] to the given [destination].\n * @param [predicate] function that takes the index of an element and the element itself\n * and returns the result of predicate evaluation on the element.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <C : MutableCollection<in UByte>> UByteArray.filterIndexedTo(destination: C, predicate: (index: Int, UByte) -> Boolean): C {\n    forEachIndexed { index, element ->\n        if (predicate(index, element))\n            destination.add(element)\n    }\n    return destination\n}\n\n/**\n * Appends all elements matching the given [predicate] to the given [destination].\n * @param [predicate] function that takes the index of an element and the element itself\n * and returns the result of predicate evaluation on the element.\n
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```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <C : MutableCollection<in UShort>> UShortArray.filterIndexedTo(destination: C, predicate: (index: Int, UShort) -> Boolean): C {\n    forEachIndexed { index, element ->\n        if (predicate(index, element))\n            destination.add(element)\n    }\n    return destination\n}\n\n/**\n * Returns a list containing all elements not matching the given [predicate].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UIntArray.filterNot(predicate: (UInt) -> Boolean): List<UInt> {\n    return filterNotTo(ArrayList<UInt>(), predicate)\n}\n\n/**\n * Returns a list containing all elements not matching the given [predicate].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun ULongArray.filterNot(predicate: (ULong) -> Boolean): List<ULong> {\n    return filterNotTo(ArrayList<ULong>(), predicate)\n}\n\n/**\n * Returns a list containing all elements not matching the given [predicate].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UByteArray.filterNot(predicate: (UByte) -> Boolean): List<UByte> {\n    return filterNotTo(ArrayList<UByte>(), predicate)\n}\n\n/**\n * Returns a list containing all elements not matching the given [predicate].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UShortArray.filterNot(predicate: (UShort) -> Boolean): List<UShort> {\n    return filterNotTo(ArrayList<UShort>(), predicate)\n}\n\n/**\n * Appends all elements not matching the given [predicate] to the given [destination].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <C : MutableCollection<in UInt>> UIntArray.filterNotTo(destination: C, predicate: (UInt) -> Boolean): C {\n    for (element in this) if (!predicate(element)) destination.add(element)\n    return destination\n}\n\n/**\n * Appends all elements not matching the given [predicate] to the given [destination].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <C : MutableCollection<in ULong>> ULongArray.filterNotTo(destination: C, predicate: (ULong) -> Boolean): C {\n    for (element in this) if (!predicate(element)) destination.add(element)\n    return destination\n}\n\n/**\n * Appends all elements not matching the given [predicate] to the given [destination].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <C : MutableCollection<in UByte>> UByteArray.filterNotTo(destination: C, predicate: (UByte) -> Boolean): C {\n    for (element in this) if (!predicate(element)) destination.add(element)\n    return destination\n}\n\n/**\n * Appends all
```

elements not matching the given [predicate] to the given [destination].\n

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <C : MutableCollection<in UShort>> UShortArray.filterNotTo(destination: C, predicate: (UShort) -> Boolean): C {\n for (element in this) if (!predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Appends all elements matching the given [predicate] to the given [destination].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <C : MutableCollection<in UInt>> UIntArray.filterTo(destination: C, predicate: (UInt) -> Boolean): C {\n for (element in this) if (predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Appends all elements matching the given [predicate] to the given [destination].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <C : MutableCollection<in ULong>> ULongArray.filterTo(destination: C, predicate: (ULong) -> Boolean): C {\n for (element in this) if (predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Appends all elements matching the given [predicate] to the given [destination].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <C : MutableCollection<in UByte>> UByteArray.filterTo(destination: C, predicate: (UByte) -> Boolean): C {\n for (element in this) if (predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Appends all elements matching the given [predicate] to the given [destination].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <C : MutableCollection<in UShort>> UShortArray.filterTo(destination: C, predicate: (UShort) -> Boolean): C {\n for (element in this) if (predicate(element)) destination.add(element)\n return destination\n}\n\n/**\n * Returns a list containing elements at indices in the specified [indices] range.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.slice(indices: IntRange): List<UInt> {\n if (indices.isEmpty()) return listOf()\n return copyOfRange(indices.start, indices.endInclusive + 1).asList()\n}\n\n/**\n * Returns a list containing elements at indices in the specified [indices] range.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.slice(indices: IntRange): List<ULong> {\n if (indices.isEmpty()) return listOf()\n return copyOfRange(indices.start, indices.endInclusive + 1).asList()\n}\n\n/**\n * Returns a list containing elements at indices in the specified [indices] range.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.slice(indices: IntRange): List<UByte> {\n if (indices.isEmpty()) return listOf()\n return copyOfRange(indices.start, indices.endInclusive + 1).asList()\n}\n\n/**\n * Returns a list containing elements at indices in the specified [indices] range.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.slice(indices: IntRange): List<UShort> {\n if (indices.isEmpty()) return listOf()\n return copyOfRange(indices.start, indices.endInclusive + 1).asList()\n}\n\n/**\n * Returns a list containing elements at specified [indices].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.slice(indices: Iterable<Int>): List<UInt> {\n val size = indices.collectionSizeOrDefault(10)\n if (size == 0) return emptyList()\n val list = ArrayList<UInt>(size)\n for (index in indices) {\n list.add(get(index))\n }\n return list\n}\n\n/**\n * Returns a list containing elements at specified [indices].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.slice(indices: Iterable<Int>): List<ULong> {\n val size = indices.collectionSizeOrDefault(10)\n if (size == 0) return emptyList()\n val list = ArrayList<ULong>(size)\n for (index in indices) {\n list.add(get(index))\n }\n return list\n}\n\n/**\n * Returns a list containing elements at specified [indices].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.slice(indices: Iterable<Int>): List<UByte> {\n val size = indices.collectionSizeOrDefault(10)\n if (size == 0) return emptyList()\n val list = ArrayList<UByte>(size)\n for (index in indices) {\n list.add(get(index))\n }\n return list\n}\n\n/**\n * Returns a list containing elements at specified [indices].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.slice(indices: Iterable<Int>): List<UShort> {\n val size = indices.collectionSizeOrDefault(10)\n if (size == 0) return emptyList()\n val list = ArrayList<UShort>(size)\n for (index in indices) {\n list.add(get(index))\n }\n return list\n}\n\n/**\n * Returns a list containing elements at specified [indices].\n
```

Returns an array containing elements of this array at specified [indices].\n

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.sliceArray(indices: Collection<Int>): UIntArray {\n    return UIntArray(storage.sliceArray(indices))\n}\n\n/**\n * Returns an array containing elements of this array at specified [indices].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.sliceArray(indices: Collection<Int>): ULongArray {\n    return ULongArray(storage.sliceArray(indices))\n}\n\n/**\n * Returns an array containing elements of this array at specified [indices].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.sliceArray(indices: Collection<Int>): UByteArray {\n    return UByteArray(storage.sliceArray(indices))\n}\n\n/**\n * Returns an array containing elements of this array at specified [indices].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.sliceArray(indices: Collection<Int>): UShortArray {\n    return UShortArray(storage.sliceArray(indices))\n}\n\n/**\n * Returns an array containing elements at indices in the specified [indices] range.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.sliceArray(indices: IntRange): UIntArray {\n    return UIntArray(storage.sliceArray(indices))\n}\n\n/**\n * Returns an array containing elements at indices in the specified [indices] range.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.sliceArray(indices: IntRange): ULongArray {\n    return ULongArray(storage.sliceArray(indices))\n}\n\n/**\n * Returns an array containing elements at indices in the specified [indices] range.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.sliceArray(indices: IntRange): UByteArray {\n    return UByteArray(storage.sliceArray(indices))\n}\n\n/**\n * Returns an array containing elements at indices in the specified [indices] range.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.sliceArray(indices: IntRange): UShortArray {\n    return UShortArray(storage.sliceArray(indices))\n}\n\n/**\n * Returns a list containing first [n] elements.\n
```

```
\n * @throws IllegalArgumentException if [n] is negative.\n * \n * @sample samples.collections.Collections.Transformations.take\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.take(n: Int): List<UInt> {\n    require(n >= 0) { "Requested element count $n is less than zero." }\n    if (n == 0) return emptyList()\n    if (n >= size) return toList()\n    if (n == 1) return listOf(this[0])\n    var count = 0\n    val list = ArrayList<UInt>(n)\n    for (item in this) {\n        list.add(item)\n        if (++count == n)\n            break\n    }\n    return list\n}\n\n/**\n * Returns a list containing first [n] elements.\n
```

```
\n * @throws IllegalArgumentException if [n] is negative.\n * \n * @sample samples.collections.Collections.Transformations.take\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.take(n: Int): List<UByte> {\n    require(n >= 0) { "Requested element count $n is less than zero." }\n    if (n == 0) return emptyList()\n    if (n >= size) return toList()\n    if (n == 1) return listOf(this[0])\n    var count = 0\n    val list = ArrayList<UByte>(n)\n    for (item in this) {\n        list.add(item)\n        if (++count == n)\n            break\n    }\n    return list\n}\n\n/**\n * Returns a list containing first [n] elements.\n
```

```
\n * @throws IllegalArgumentException if [n] is negative.\n * \n * @sample samples.collections.Collections.Transformations.take\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.take(n: Int): List<UShort> {\n    require(n >= 0) { "Requested element count $n is less than zero." }\n    if (n == 0) return emptyList()\n    if (n >= size) return toList()\n    if (n == 1) return listOf(this[0])\n    var count = 0\n    val list = ArrayList<UShort>(n)\n    for (item in this) {\n        list.add(item)\n        if (++count == n)\n            break\n    }\n    return list\n}\n\n/**\n * Returns
```



```

a list containing last [n] elements.\n * \n * @throws IllegalArgumentException if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.take\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.takeLast(n: Int): List<UInt> {\n
require(n >= 0) { "Requested element count $n is less than zero." }\n if (n == 0) return emptyList()\n val size =
size\n if (n >= size) return toList()\n if (n == 1) return listOf(this[size - 1])\n val list = ArrayList<UInt>(n)\n
for (index in size - n until size)\n list.add(this[index])\n return list\n}\n\n/**\n * Returns a list containing last
[n] elements.\n * \n * @throws IllegalArgumentException if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.take\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.takeLast(n: Int): List<ULong>
{\n
require(n >= 0) { "Requested element count $n is less than zero." }\n if (n == 0) return emptyList()\n val
size = size\n if (n >= size) return toList()\n if (n == 1) return listOf(this[size - 1])\n val list =
ArrayList<ULong>(n)\n for (index in size - n until size)\n list.add(this[index])\n return list\n}\n\n/**\n *
Returns a list containing last [n] elements.\n * \n * @throws IllegalArgumentException if [n] is negative.\n * \n *
@sample samples.collections.Collections.Transformations.take\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.takeLast(n: Int): List<UByte>
{\n
require(n >= 0) { "Requested element count $n is less than zero." }\n if (n == 0) return emptyList()\n val
size = size\n if (n >= size) return toList()\n if (n == 1) return listOf(this[size - 1])\n val list =
ArrayList<UByte>(n)\n for (index in size - n until size)\n list.add(this[index])\n return list\n}\n\n/**\n *
Returns a list containing last [n] elements.\n * \n * @throws IllegalArgumentException if [n] is negative.\n * \n *
@sample samples.collections.Collections.Transformations.take\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.takeLast(n: Int): List<UShort>
{\n
require(n >= 0) { "Requested element count $n is less than zero." }\n if (n == 0) return emptyList()\n val
size = size\n if (n >= size) return toList()\n if (n == 1) return listOf(this[size - 1])\n val list =
ArrayList<UShort>(n)\n for (index in size - n until size)\n list.add(this[index])\n return list\n}\n\n/**\n *
Returns a list containing last elements satisfying the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.take\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.takeLastWhile(predicate: (UInt) -> Boolean): List<UInt> {\n for (index in lastIndex downTo 0) {\n
if (!predicate(this[index])) {\n return drop(index + 1)\n }\n }\n return toList()\n}\n\n/**\n * Returns a
list containing last elements satisfying the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.take\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.takeLastWhile(predicate: (ULong) -> Boolean): List<ULong> {\n for (index in lastIndex downTo 0)
{\n
if (!predicate(this[index])) {\n return drop(index + 1)\n }\n }\n return toList()\n}\n\n/**\n *
Returns a list containing last elements satisfying the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.take\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.takeLastWhile(predicate: (UByte) -> Boolean): List<UByte> {\n for (index in lastIndex downTo 0)
{\n
if (!predicate(this[index])) {\n return drop(index + 1)\n }\n }\n return toList()\n}\n\n/**\n *
Returns a list containing last elements satisfying the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.take\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.takeLastWhile(predicate: (UShort) -> Boolean): List<UShort> {\n for (index in lastIndex downTo 0)
{\n
if (!predicate(this[index])) {\n return drop(index + 1)\n }\n }\n return toList()\n}\n\n/**\n *
Returns a list containing first elements satisfying the given [predicate].\n * \n * @sample
samples.collections.Collections.Transformations.take\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.takeWhile(predicate: (UInt) -> Boolean): List<UInt> {\n val list = ArrayList<UInt>()\n for (item in

```

```

this) {\n    if (!predicate(item))\n        break\n        list.add(item)\n    }\n    return list\n}\n\n/**\n * Returns a list containing first elements satisfying the given [predicate].\n * \n * @sample samples.collections.Collections.Transformations.take\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun ULongArray.takeWhile(predicate: (ULong) -> Boolean): List<ULong> {\n    val list = ArrayList<ULong>()\n    for (item in this) {\n        if (!predicate(item))\n            break\n            list.add(item)\n    }\n    return list\n}\n\n/**\n * Returns a list containing first elements satisfying the given [predicate].\n * \n * @sample samples.collections.Collections.Transformations.take\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UByteArray.takeWhile(predicate: (UByte) -> Boolean): List<UByte> {\n    val list = ArrayList<UByte>()\n    for (item in this) {\n        if (!predicate(item))\n            break\n            list.add(item)\n    }\n    return list\n}\n\n/**\n * Returns a list containing first elements satisfying the given [predicate].\n * \n * @sample samples.collections.Collections.Transformations.take\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UShortArray.takeWhile(predicate: (UShort) -> Boolean): List<UShort> {\n    val list = ArrayList<UShort>()\n    for (item in this) {\n        if (!predicate(item))\n            break\n            list.add(item)\n    }\n    return list\n}\n\n/**\n * Reverses elements in the array in-place.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UIntArray.reverse(): Unit {\n    storage.reverse()\n}\n\n/**\n * Reverses elements in the array in-place.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun ULongArray.reverse(): Unit {\n    storage.reverse()\n}\n\n/**\n * Reverses elements in the array in-place.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UByteArray.reverse(): Unit {\n    storage.reverse()\n}\n\n/**\n * Reverses elements in the array in-place.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UShortArray.reverse(): Unit {\n    storage.reverse()\n}\n\n/**\n * Returns a list with elements in reversed order.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.reversed(): List<UInt> {\n    if (isEmpty()) return emptyList()\n    val list = toMutableList()\n    list.reverse()\n    return list\n}\n\n/**\n * Returns a list with elements in reversed order.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.reversed(): List<ULong> {\n    if (isEmpty()) return emptyList()\n    val list = toMutableList()\n    list.reverse()\n    return list\n}\n\n/**\n * Returns a list with elements in reversed order.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.reversed(): List<UByte> {\n    if (isEmpty()) return emptyList()\n    val list = toMutableList()\n    list.reverse()\n    return list\n}\n\n/**\n * Returns a list with elements in reversed order.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.reversed(): List<UShort> {\n    if (isEmpty()) return emptyList()\n    val list = toMutableList()\n    list.reverse()\n    return list\n}\n\n/**\n * Returns an array with elements of this array in reversed order.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UIntArray.reversedArray(): UIntArray {\n    return UIntArray(storage.reversedArray())\n}\n\n/**\n * Returns an array with elements of this array in reversed order.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun ULongArray.reversedArray(): ULongArray {\n    return ULongArray(storage.reversedArray())\n}\n\n/**\n * Returns an array with elements of this array in reversed order.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UByteArray.reversedArray(): UByteArray {\n    return UByteArray(storage.reversedArray())\n}\n\n/**\n * Returns an array with elements of this array in reversed order.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UShortArray.reversedArray(): UShortArray {\n    return UShortArray(storage.reversedArray())\n}\n\n/**\n * Sorts elements in the array in-place descending according to their natural sort order.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.sortDescending(): Unit {\n    if

```



Returns a list of all elements sorted descending according to their natural sort order.  
 \* The sort is `_stable_`. It means that equal elements preserve their order relative to each other after sorting.

```

*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UByteArray.sortedDescending():
List<UByte> {
    return copyOf().apply { sort() }.reversed()
}

```

\* Returns a list of all elements sorted descending according to their natural sort order.  
 \* The sort is `_stable_`. It means that equal elements preserve their order relative to each other after sorting.

```

*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UShortArray.sortedDescending(): List<UShort> {
    return copyOf().apply { sort() }.reversed()
}

```

\* Returns an array of type `[ByteArray]`, which is a view of this array where each element is a signed reinterpretation  
 \* of the corresponding element of this array.

```

*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes@kotlin.internal.InlineOnly
public inline fun
UByteArray.asByteArray(): ByteArray {
    return storage
}

```

\* Returns an array of type `[IntArray]`, which is a view of this array where each element is a signed reinterpretation  
 \* of the corresponding element of this array.

```

*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes@kotlin.internal.InlineOnly
public inline fun
UIntArray.asIntArray(): IntArray {
    return storage
}

```

\* Returns a `[List]` that wraps the original array.

```

*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public expect fun UIntArray.asList():
List<UInt>

```

\* Returns a `[List]` that wraps the original array.

```

*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public expect fun ULongArray.asList():
List<ULong>

```

\* Returns a `[List]` that wraps the original array.

```

*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public expect fun UByteArray.asList():
List<UByte>

```

\* Returns a `[List]` that wraps the original array.

```

*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public expect fun UShortArray.asList():
List<UShort>

```

\* Returns an array of type `[LongArray]`, which is a view of this array where each element is a signed reinterpretation  
 \* of the corresponding element of this array.

```

*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes@kotlin.internal.InlineOnly
public inline fun
ULongArray.asLongArray(): LongArray {
    return storage
}

```

\* Returns an array of type `[ShortArray]`, which is a view of this array where each element is a signed reinterpretation  
 \* of the corresponding element of this array.

```

*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes@kotlin.internal.InlineOnly
public inline fun
UShortArray.asShortArray(): ShortArray {
    return storage
}

```

\* Returns an array of type `[UByteArray]`, which is a view of this array where each element is an unsigned reinterpretation  
 \* of the corresponding element of this array.

```

*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes@kotlin.internal.InlineOnly
public inline fun
ByteArray.asUByteArray(): UByteArray {
    return UByteArray(this)
}

```

\* Returns an array of type `[UIIntArray]`, which is a view of this array where each element is an unsigned reinterpretation  
 \* of the corresponding element of this array.

```

*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes@kotlin.internal.InlineOnly
public inline fun
IntArray.asUIIntArray(): UIIntArray {
    return UIIntArray(this)
}

```

\* Returns an array of type `[ULongArray]`, which is a view of this array where each element is an unsigned reinterpretation  
 \* of the corresponding element of this array.

```

*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes@kotlin.internal.InlineOnly
public inline fun
LongArray.asULongArray(): ULongArray {
    return ULongArray(this)
}

```

\* Returns an array of type `[UShortArray]`, which is a view of this array where each element is an unsigned reinterpretation  
 \* of the corresponding element of this array.

```

*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes@kotlin.internal.InlineOnly
public inline fun
ShortArray.asUShortArray(): UShortArray {
    return UShortArray(this)
}

```

\* Returns ``true`` if the two specified arrays are *structurally* equal to one another,  
 \* i.e. contain the same number of the same elements in the same order.

```

*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public infix fun
UIIntArray.contentEquals(other: UIIntArray): Boolean {
    return storage.contentEquals(other.storage)
}

```

\* Returns ``true`` if the two specified arrays are *structurally* equal to one another,  
 \* i.e. contain the same number of the same elements in the same order.

```

*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public infix fun

```

```

UByteArray.contentEquals(other: UByteArray): Boolean {
    return storage.contentEquals(other.storage)
}

/**
 * Returns `true` if the two specified arrays are structurally equal to one another,
 * i.e. contain the same number of the same elements in the same order.
 */
@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public infix fun UByteArray.contentEquals(other: UByteArray): Boolean {
    return storage.contentEquals(other.storage)
}

/**
 * Returns `true` if the two specified arrays are structurally equal to one another,
 * i.e. contain the same number of the same elements in the same order.
 */
@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public infix fun UShortArray.contentEquals(other: UShortArray): Boolean {
    return storage.contentEquals(other.storage)
}

/**
 * Returns a hash code based on the contents of this array as if it is [List].
 */
@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UIntArray.contentHashCode(): Int {
    return storage.contentHashCode()
}

/**
 * Returns a hash code based on the contents of this array as if it is [List].
 */
@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun ULongArray.contentHashCode(): Int {
    return storage.contentHashCode()
}

/**
 * Returns a hash code based on the contents of this array as if it is [List].
 */
@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UByteArray.contentHashCode(): Int {
    return storage.contentHashCode()
}

/**
 * Returns a hash code based on the contents of this array as if it is [List].
 */
@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UShortArray.contentHashCode(): Int {
    return storage.contentHashCode()
}

/**
 * Returns a string representation of the contents of the specified array as if it is [List].
 */
@sample samples.collections.Arrays.ContentOperations.contentToString
@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UIntArray.contentToString(): String {
    return joinToString(", ", "[", "]")
}

/**
 * Returns a string representation of the contents of the specified array as if it is [List].
 */
@sample samples.collections.Arrays.ContentOperations.contentToString
@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun ULongArray.contentToString(): String {
    return joinToString(", ", "[", "]")
}

/**
 * Returns a string representation of the contents of the specified array as if it is [List].
 */
@sample samples.collections.Arrays.ContentOperations.contentToString
@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UByteArray.contentToString(): String {
    return joinToString(", ", "[", "]")
}

/**
 * Returns a string representation of the contents of the specified array as if it is [List].
 */
@sample samples.collections.Arrays.ContentOperations.contentToString
@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UShortArray.contentToString(): String {
    return joinToString(", ", "[", "]")
}

/**
 * Copies this array or its subrange into the [destination] array and returns that array.
 * It's allowed to pass the same array in the [destination] and even specify the subrange so that it overlaps with the destination range.
 * @param destination the array to copy to.
 * @param destinationOffset the position in the [destination] array to copy to, 0 by default.
 * @param startIndex the beginning (inclusive) of the subrange to copy, 0 by default.
 * @param endIndex the end (exclusive) of the subrange to copy, size of this array by default.
 * @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this array indices or when `startIndex > endIndex`.
 * @throws IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array starting at the specified [destinationOffset],
 * or when that index is out of the [destination] array indices range.
 * @return the [destination] array.
 */
@SinceKotlin("1.3")@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun UIntArray.copyInto(destination: UIntArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size): UIntArray {
    return storage.copyInto(destination.storage, destinationOffset, startIndex, endIndex)
}

/**
 * Copies this array or its subrange into the [destination] array and returns that array.
 * It's allowed to pass the same array in the [destination] and even specify the subrange so that it overlaps with the destination range.
 * @param destination the array to copy to.
 * @param destinationOffset the position in the [destination] array to copy to, 0 by default.
 * @param startIndex the beginning (inclusive) of the subrange to copy, 0 by default.
 * @param endIndex the end (exclusive) of the subrange to copy, size of this array by default.
 * @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of
 */

```

range of this array indices or when `startIndex > endIndex`. \n \* @throws IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array starting at the specified [destinationOffset], \n \* or when that index is out of the [destination] array indices range. \n \* \n \* @return the [destination] array. \n

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.copyInto(destination: ULongArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size):
ULongArray {\n    storage.copyInto(destination.storage, destinationOffset, startIndex, endIndex)\n    return
destination\n}\n\n/**\n * Copies this array or its subrange into the [destination] array and returns that array. \n * \n *
It's allowed to pass the same array in the [destination] and even specify the subrange so that it overlaps with the
destination range. \n * \n * @param destination the array to copy to. \n * @param destinationOffset the position in the
[destination] array to copy to, 0 by default. \n * @param startIndex the beginning (inclusive) of the subrange to copy,
0 by default. \n * @param endIndex the end (exclusive) of the subrange to copy, size of this array by default. \n * \n *
@throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of
range of this array indices or when `startIndex > endIndex`. \n * @throws IndexOutOfBoundsException when the
subrange doesn't fit into the [destination] array starting at the specified [destinationOffset], \n * or when that index is
out of the [destination] array indices range. \n * \n * @return the [destination] array. \n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.copyInto(destination: UByteArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size):
UByteArray {\n    storage.copyInto(destination.storage, destinationOffset, startIndex, endIndex)\n    return
destination\n}\n\n/**\n * Copies this array or its subrange into the [destination] array and returns that array. \n * \n *
It's allowed to pass the same array in the [destination] and even specify the subrange so that it overlaps with the
destination range. \n * \n * @param destination the array to copy to. \n * @param destinationOffset the position in the
[destination] array to copy to, 0 by default. \n * @param startIndex the beginning (inclusive) of the subrange to copy,
0 by default. \n * @param endIndex the end (exclusive) of the subrange to copy, size of this array by default. \n * \n *
@throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of
range of this array indices or when `startIndex > endIndex`. \n * @throws IndexOutOfBoundsException when the
subrange doesn't fit into the [destination] array starting at the specified [destinationOffset], \n * or when that index is
out of the [destination] array indices range. \n * \n * @return the [destination] array. \n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.copyInto(destination: UShortArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int =
size): UShortArray {\n    storage.copyInto(destination.storage, destinationOffset, startIndex, endIndex)\n    return
destination\n}\n\n/**\n * Returns new array which is a copy of the original array. \n * \n * @sample
samples.collections.Arrays.CopyOfOperations.copyOfOf\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.copyOfOf(): UIntArray {\n    return UIntArray(storage.copyOfOf())\n}\n\n/**\n * Returns new array which is
a copy of the original array. \n * \n * @sample samples.collections.Arrays.CopyOfOperations.copyOfOf\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.copyOfOf(): ULongArray {\n    return ULongArray(storage.copyOfOf())\n}\n\n/**\n * Returns new array
which is a copy of the original array. \n * \n * @sample samples.collections.Arrays.CopyOfOperations.copyOfOf\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.copyOfOf(): UByteArray {\n    return UByteArray(storage.copyOfOf())\n}\n\n/**\n * Returns new array
which is a copy of the original array. \n * \n * @sample samples.collections.Arrays.CopyOfOperations.copyOfOf\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.copyOfOf(): UShortArray {\n    return UShortArray(storage.copyOfOf())\n}\n\n/**\n * Returns new array
which is a copy of the original array, resized to the given [newSize]. \n * The copy is either truncated or padded at
the end with zero values if necessary. \n * \n * - If [newSize] is less than the size of the original array, the copy array
is truncated to the [newSize]. \n * - If [newSize] is greater than the size of the original array, the extra elements in the
copy array are filled with zero values. \n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
```

```

UIntArray.copyOf(newSize: Int): UIntArray {
    return UIntArray(storage.copyOf(newSize))
}

Returns new array which is a copy of the original array, resized to the given [newSize].
The copy is either truncated or padded at the end with zero values if necessary.
- If [newSize] is less than the size of the original array, the copy array is truncated to the [newSize].
- If [newSize] is greater than the size of the original array, the extra elements in the copy array are filled with zero values.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
ULongArray.copyOf(newSize: Int): ULongArray {
    return ULongArray(storage.copyOf(newSize))
}

Returns new array which is a copy of the original array, resized to the given [newSize].
The copy is either truncated or padded at the end with zero values if necessary.
- If [newSize] is less than the size of the original array, the copy array is truncated to the [newSize].
- If [newSize] is greater than the size of the original array, the extra elements in the copy array are filled with zero values.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UByteArray.copyOf(newSize: Int): UByteArray {
    return UByteArray(storage.copyOf(newSize))
}

Returns new array which is a copy of the original array, resized to the given [newSize].
The copy is either truncated or padded at the end with zero values if necessary.
- If [newSize] is less than the size of the original array, the copy array is truncated to the [newSize].
- If [newSize] is greater than the size of the original array, the extra elements in the copy array are filled with zero values.

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UShortArray.copyOf(newSize: Int): UShortArray {
    return UShortArray(storage.copyOf(newSize))
}

Returns a new array which is a copy of the specified range of the original array.
@param fromIndex the start of the range (inclusive), must be in `0..array.size`
@param toIndex the end of the range (exclusive), must be in `fromIndex..array.size`

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UIntArray.copyOfRange(fromIndex: Int, toIndex: Int): UIntArray {
    return
    UIntArray(storage.copyOfRange(fromIndex, toIndex))
}

Returns a new array which is a copy of the specified range of the original array.
@param fromIndex the start of the range (inclusive), must be in `0..array.size`
@param toIndex the end of the range (exclusive), must be in `fromIndex..array.size`

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
ULongArray.copyOfRange(fromIndex: Int, toIndex: Int): ULongArray {
    return
    ULongArray(storage.copyOfRange(fromIndex, toIndex))
}

Returns a new array which is a copy of the specified range of the original array.
@param fromIndex the start of the range (inclusive), must be in `0..array.size`
@param toIndex the end of the range (exclusive), must be in `fromIndex..array.size`

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UByteArray.copyOfRange(fromIndex: Int, toIndex: Int): UByteArray {
    return
    UByteArray(storage.copyOfRange(fromIndex, toIndex))
}

Returns a new array which is a copy of the specified range of the original array.
@param fromIndex the start of the range (inclusive), must be in `0..array.size`
@param toIndex the end of the range (exclusive), must be in `fromIndex..array.size`

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UShortArray.copyOfRange(fromIndex: Int, toIndex: Int): UShortArray {
    return
    UShortArray(storage.copyOfRange(fromIndex, toIndex))
}

Fills this array or its subrange with the specified [element] value.
@param fromIndex the start of the range (inclusive), 0 by default.
@param toIndex the end of the range (exclusive), size of this array by default.
@throws
IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this array.
@throws IllegalArgumentException if [fromIndex] is greater than [toIndex].

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun UIntArray.fill(element: UInt, fromIndex: Int = 0, toIndex: Int = size): Unit {
    storage.fill(element.toInt(), fromIndex, toIndex)
}

Fills this array or its subrange with the specified [element] value.
@param fromIndex the start of the range (inclusive), 0 by default.
@param toIndex the end of the range (exclusive), size of this array by default.
@throws

```

IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this array.\n \*  
 @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.fill(element: ULong,
fromIndex: Int = 0, toIndex: Int = size): Unit {\n    storage.fill(element.toLong(), fromIndex, toIndex)\n}\n\n/**\n *
Fills this array or its subrange with the specified [element] value.\n * \n * @param fromIndex the start of the range
(inclusive), 0 by default.\n * @param toIndex the end of the range (exclusive), size of this array by default.\n * \n *
@throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this
array.\n * @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.fill(element: UByte,
fromIndex: Int = 0, toIndex: Int = size): Unit {\n    storage.fill(element.toByte(), fromIndex, toIndex)\n}\n\n/**\n *
Fills this array or its subrange with the specified [element] value.\n * \n * @param fromIndex the start of the range
(inclusive), 0 by default.\n * @param toIndex the end of the range (exclusive), size of this array by default.\n * \n *
@throws IndexOutOfBoundsException if [fromIndex] is less than zero or [toIndex] is greater than the size of this
array.\n * @throws IllegalArgumentException if [fromIndex] is greater than [toIndex].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.fill(element: UShort,
fromIndex: Int = 0, toIndex: Int = size): Unit {\n    storage.fill(element.toShort(), fromIndex, toIndex)\n}\n\n/**\n *
Returns the range of valid indices for the array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic inline val UIntArray.indices: IntRange\n    get()
= storage.indices\n\n/**\n * Returns the range of valid indices for the array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic inline val ULongArray.indices: IntRange\n    get()
= storage.indices\n\n/**\n * Returns the range of valid indices for the array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic inline val UByteArray.indices: IntRange\n    get()
= storage.indices\n\n/**\n * Returns the range of valid indices for the array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic inline val UShortArray.indices: IntRange\n    get()
= storage.indices\n\n/**\n * Returns the last valid index for the array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic inline val UIntArray.lastIndex: Int\n    get() =
storage.lastIndex\n\n/**\n * Returns the last valid index for the array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic inline val ULongArray.lastIndex: Int\n    get() =
storage.lastIndex\n\n/**\n * Returns the last valid index for the array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic inline val UByteArray.lastIndex: Int\n    get() =
storage.lastIndex\n\n/**\n * Returns the last valid index for the array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic inline val UShortArray.lastIndex: Int\n    get() =
storage.lastIndex\n\n/**\n * Returns an array containing all elements of the original array and then the given
[element].\n * \n * @param element the element to append to the array.\n * \n * @return an array containing all elements
of the original array and then the given [element].\n * \n * @since 1.3\n * \n * @experimental\n * \n * @kotlin.internal\n * \n * @inline\n * \n * @public\n
```

```
operator fun UIntArray.plus(element: UInt): UIntArray {\n    return UIntArray(storage +
element.toInt())\n}\n\n/**\n * Returns an array containing all elements of the original array and then the given
[element].\n * \n * @param element the element to append to the array.\n * \n * @return an array containing all elements
of the original array and then the given [element].\n * \n * @since 1.3\n * \n * @experimental\n * \n * @kotlin.internal\n * \n * @inline\n * \n * @public\n
```

```
operator fun ULongArray.plus(element: ULong): ULongArray {\n    return ULongArray(storage +
element.toLong())\n}\n\n/**\n * Returns an array containing all elements of the original array and then the given
[element].\n * \n * @param element the element to append to the array.\n * \n * @return an array containing all elements
of the original array and then the given [element].\n * \n * @since 1.3\n * \n * @experimental\n * \n * @kotlin.internal\n * \n * @inline\n * \n * @public\n
```

```
operator fun UByteArray.plus(element: UByte): UByteArray {\n    return UByteArray(storage +
element.toByte())\n}\n\n/**\n * Returns an array containing all elements of the original array and then the given
[element].\n * \n * @param element the element to append to the array.\n * \n * @return an array containing all elements
of the original array and then the given [element].\n * \n * @since 1.3\n * \n * @experimental\n * \n * @kotlin.internal\n * \n * @inline\n * \n * @public\n
```

```
operator fun UShortArray.plus(element: UShort): UShortArray {\n    return UShortArray(storage +
element.toShort())\n}\n\n/**\n * Returns an array containing all elements of the original array and then all elements
of the given [elements] collection.\n * \n * @param elements the collection of elements to append to the array.\n * \n * @return an array containing all elements
of the original array and then all elements of the given [elements] collection.\n * \n * @since 1.3\n * \n * @experimental\n * \n * @public\n
```

```
operator fun UIntArray.plus(elements: Collection<UInt>): UIntArray {\n    var index = size\n    val result =
storage.copyOf(size + elements.size)\n    for (element in elements) result[index++] = element.toInt()\n    return
```



```

UIntArray(result)\n\n\n**\n * Returns an array containing all elements of the original array and then all elements
of the given [elements] collection.\n *^@\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic operator
fun ULongArray.plus(elements: Collection<ULong>): ULongArray {\n    var index = size\n    val result =
storage.copyOf(size + elements.size)\n    for (element in elements) result[index++] = element.toLong()\n    return
ULongArray(result)\n}\n\n\n**\n * Returns an array containing all elements of the original array and then all
elements of the given [elements] collection.\n *^@\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic
operator fun UByteArray.plus(elements: Collection<UByte>): UByteArray {\n    var index = size\n    val result =
storage.copyOf(size + elements.size)\n    for (element in elements) result[index++] = element.toByte()\n    return
UByteArray(result)\n}\n\n\n**\n * Returns an array containing all elements of the original array and then all elements
of the given [elements] collection.\n *^@\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic operator
fun UShortArray.plus(elements: Collection<UShort>): UShortArray {\n    var index = size\n    val result =
storage.copyOf(size + elements.size)\n    for (element in elements) result[index++] = element.toShort()\n    return
UShortArray(result)\n}\n\n\n**\n * Returns an array containing all elements of the original array and then all
elements of the given [elements] array.\n
*^@\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun
UIntArray.plus(elements: UIntArray): UIntArray {\n    return UIntArray(storage + elements.storage)\n}\n\n\n**\n *
Returns an array containing all elements of the original array and then all elements of the given [elements] array.\n
*^@\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun
ULongArray.plus(elements: ULongArray): ULongArray {\n    return ULongArray(storage +
elements.storage)\n}\n\n\n**\n * Returns an array containing all elements of the original array and then all elements
of the given [elements] array.\n
*^@\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun
UByteArray.plus(elements: UByteArray): UByteArray {\n    return UByteArray(storage +
elements.storage)\n}\n\n\n**\n * Returns an array containing all elements of the original array and then all elements
of the given [elements] array.\n
*^@\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun
UShortArray.plus(elements: UShortArray): UShortArray {\n    return UShortArray(storage +
elements.storage)\n}\n\n\n**\n * Sorts the array in-place.\n * \n * @sample
samples.collections.Arrays.Sorting.sortArray\n *^@\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic
fun UIntArray.sort(): Unit {\n    if (size > 1) sortArray(this)\n}\n\n\n**\n * Sorts the array in-place.\n * \n * @sample
samples.collections.Arrays.Sorting.sortArray\n *^@\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic
fun ULongArray.sort(): Unit {\n    if (size > 1) sortArray(this)\n}\n\n\n**\n * Sorts the array in-place.\n * \n *
@sample samples.collections.Arrays.Sorting.sortArray\n
*^@\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.sort(): Unit {\n    if (size > 1)
sortArray(this)\n}\n\n\n**\n * Sorts the array in-place.\n * \n * @sample
samples.collections.Arrays.Sorting.sortArray\n *^@\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic
fun UShortArray.sort(): Unit {\n    if (size > 1) sortArray(this)\n}\n\n\n**\n * Returns an array of type [ByteArray],
which is a copy of this array where each element is a signed reinterpretation\n * of the corresponding element of this
array.\n *^@\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.toByteArray(): ByteArray {\n    return storage.copyOf()\n}\n\n\n**\n * Returns an array of type
[IntArray], which is a copy of this array where each element is a signed reinterpretation\n * of the corresponding
element of this array.\n
*^@\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.toIntArray(): IntArray {\n    return storage.copyOf()\n}\n\n\n**\n * Returns an array of type [LongArray],
which is a copy of this array where each element is a signed reinterpretation\n * of the corresponding element of this
array.\n *^@\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.toLongArray(): LongArray {\n    return storage.copyOf()\n}\n\n\n**\n * Returns an array of type
[ShortArray], which is a copy of this array where each element is a signed reinterpretation\n * of the corresponding

```

element of this array.\n

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun  
UShortArray.toShortArray(): ShortArray {\n    return storage.copyOfOf()\n}\n\n/**\n * Returns a *typed* object array  
containing all of the elements of this primitive array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.toTypedArray(): Array<UInt>  
{\n    return Array(size) { index -> this[index] }\n}\n\n/**\n * Returns a *typed* object array containing all of the  
elements of this primitive array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun  
ULongArray.toTypedArray(): Array<ULong> {\n    return Array(size) { index -> this[index] }\n}\n\n/**\n * Returns a *typed* object array containing all of the elements of this primitive array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.toTypedArray():  
Array<UByte> {\n    return Array(size) { index -> this[index] }\n}\n\n/**\n * Returns a *typed* object array  
containing all of the elements of this primitive array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.toTypedArray():  
Array<UShort> {\n    return Array(size) { index -> this[index] }\n}\n\n/**\n * Returns an array of UByte containing  
all of the elements of this generic array.\n *\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun  
Array<out UByte>.toUByteArray(): UByteArray {\n    return UByteArray(size) { index -> this[index] }\n}\n\n/**\n * Returns an array of type [UByteArray], which is a copy of this array where each element is an unsigned  
reinterpretation\n * of the corresponding element of this array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun  
ByteArray.toUByteArray(): UByteArray {\n    return UByteArray(this.copyOf())\n}\n\n/**\n * Returns an array of  
UInt containing all of the elements of this generic array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun Array<out UInt>.toUIntArray(): UIntArray  
{\n    return UIntArray(size) { index -> this[index] }\n}\n\n/**\n * Returns an array of type [UIntArray], which is a  
copy of this array where each element is an unsigned reinterpretation\n * of the corresponding element of this  
array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun  
IntArray.toUIntArray(): UIntArray {\n    return UIntArray(this.copyOf())\n}\n\n/**\n * Returns an array of ULong  
containing all of the elements of this generic array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun Array<out ULong>.toULongArray():  
ULongArray {\n    return ULongArray(size) { index -> this[index] }\n}\n\n/**\n * Returns an array of type  
[ULongArray], which is a copy of this array where each element is an unsigned reinterpretation\n * of the  
corresponding element of this array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun  
LongArray.toULongArray(): ULongArray {\n    return ULongArray(this.copyOf())\n}\n\n/**\n * Returns an array  
of UShort containing all of the elements of this generic array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun Array<out UShort>.toUShortArray():  
UShortArray {\n    return UShortArray(size) { index -> this[index] }\n}\n\n/**\n * Returns an array of type  
[UShortArray], which is a copy of this array where each element is an unsigned reinterpretation\n * of the  
corresponding element of this array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun  
ShortArray.toUShortArray(): UShortArray {\n    return UShortArray(this.copyOf())\n}\n\n/**\n * Returns a single  
list of all elements yielded from results of [transform] function being invoked on each element of original array.\n *\n@sample samples.collections.Collections.Transformations.flatMap\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>  
UIntArray.flatMap(transform: (UInt) -> Iterable<R>): List<R> {\n    return flatMapTo(ArrayList<R>(),  
transform)\n}\n\n/**\n * Returns a single list of all elements yielded from results of [transform] function being  
invoked on each element of original array.\n *\n@sample  
samples.collections.Collections.Transformations.flatMap\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>
```

```

UByteArray.flatMap(transform: (UByte) -> Iterable<R>): List<R> {\n  return flatMapTo(ArrayList<R>(),
transform)\n}\n\n/**\n * Returns a single list of all elements yielded from results of [transform] function being
invoked on each element of original array.\n * \n * @sample
samples.collections.Collections.Transformations.flatMap\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>
UByteArray.flatMap(transform: (UByte) -> Iterable<R>): List<R> {\n  return flatMapTo(ArrayList<R>(),
transform)\n}\n\n/**\n * Returns a single list of all elements yielded from results of [transform] function being
invoked on each element of original array.\n * \n * @sample
samples.collections.Collections.Transformations.flatMap\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>
UShortArray.flatMap(transform: (UShort) -> Iterable<R>): List<R> {\n  return flatMapTo(ArrayList<R>(),
transform)\n}\n\n/**\n * Appends all elements yielded from results of [transform] function being invoked on each
element of original array, to the given [destination].\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, C :
MutableCollection<in R>> UIntArray.flatMapTo(destination: C, transform: (UInt) -> Iterable<R>): C {\n  for
(element in this) {\n    val list = transform(element)\n    destination.addAll(list)\n  }\n  return
destination\n}\n\n/**\n * Appends all elements yielded from results of [transform] function being invoked on each
element of original array, to the given [destination].\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, C :
MutableCollection<in R>> ULongArray.flatMapTo(destination: C, transform: (ULong) -> Iterable<R>): C {\n  for
(element in this) {\n    val list = transform(element)\n    destination.addAll(list)\n  }\n  return
destination\n}\n\n/**\n * Appends all elements yielded from results of [transform] function being invoked on each
element of original array, to the given [destination].\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, C :
MutableCollection<in R>> UByteArray.flatMapTo(destination: C, transform: (UByte) -> Iterable<R>): C {\n  for
(element in this) {\n    val list = transform(element)\n    destination.addAll(list)\n  }\n  return
destination\n}\n\n/**\n * Appends all elements yielded from results of [transform] function being invoked on each
element of original array, to the given [destination].\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, C :
MutableCollection<in R>> UShortArray.flatMapTo(destination: C, transform: (UShort) -> Iterable<R>): C {\n  for
(element in this) {\n    val list = transform(element)\n    destination.addAll(list)\n  }\n  return
destination\n}\n\n/**\n * Groups elements of the original array by the key returned by the given [keySelector]
function\n * applied to each element and returns a map where each group key is associated with a list of
corresponding elements.\n * \n * The returned map preserves the entry iteration order of the keys produced from the
original array.\n * \n * @sample samples.collections.Collections.Transformations.groupBy\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <K>
UIntArray.groupBy(keySelector: (UInt) -> K): Map<K, List<UInt>> {\n  return groupByTo(LinkedHashMap<K,
MutableList<UInt>>(), keySelector)\n}\n\n/**\n * Groups elements of the original array by the key returned by the
given [keySelector] function\n * applied to each element and returns a map where each group key is associated with
a list of corresponding elements.\n * \n * The returned map preserves the entry iteration order of the keys produced
from the original array.\n * \n * @sample samples.collections.Collections.Transformations.groupBy\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <K>
UByteArray.groupBy(keySelector: (UByte) -> K): Map<K, List<UByte>> {\n  return
groupByTo(LinkedHashMap<K, MutableList<UByte>>(), keySelector)\n}\n\n/**\n * Groups elements of the
original array by the key returned by the given [keySelector] function\n * applied to each element and returns a map
where each group key is associated with a list of corresponding elements.\n * \n * The returned map preserves the
entry iteration order of the keys produced from the original array.\n * \n * @sample
samples.collections.Collections.Transformations.groupBy\n

```

```

*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <K>
UByteArray.groupBy(keySelector: (UByte) -> K): Map<K, List<UByte>> {\n    return
groupByTo(LinkedHashMap<K, MutableList<UByte>>(), keySelector)\n}\n\n/**\n * Groups elements of the
original array by the key returned by the given [keySelector] function\n * applied to each element and returns a map
where each group key is associated with a list of corresponding elements.\n * \n * The returned map preserves the
entry iteration order of the keys produced from the original array.\n * \n * @sample
samples.collections.Collections.Transformations.groupBy\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <K>
UShortArray.groupBy(keySelector: (UShort) -> K): Map<K, List<UShort>> {\n    return
groupByTo(LinkedHashMap<K, MutableList<UShort>>(), keySelector)\n}\n\n/**\n * Groups values returned by
the [valueTransform] function applied to each element of the original array\n * by the key returned by the given
[keySelector] function applied to the element\n * and returns a map where each group key is associated with a list of
corresponding values.\n * \n * The returned map preserves the entry iteration order of the keys produced from the
original array.\n * \n * @sample samples.collections.Collections.Transformations.groupByKeysAndValues\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <K, V>
UIntArray.groupBy(keySelector: (UInt) -> K, valueTransform: (UInt) -> V): Map<K, List<V>> {\n    return
groupByTo(LinkedHashMap<K, MutableList<V>>(), keySelector, valueTransform)\n}\n\n/**\n * Groups values
returned by the [valueTransform] function applied to each element of the original array\n * by the key returned by
the given [keySelector] function applied to the element\n * and returns a map where each group key is associated
with a list of corresponding values.\n * \n * The returned map preserves the entry iteration order of the keys
produced from the original array.\n * \n * @sample
samples.collections.Collections.Transformations.groupByKeysAndValues\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <K, V>
ULongArray.groupBy(keySelector: (ULong) -> K, valueTransform: (ULong) -> V): Map<K, List<V>> {\n    return
groupByTo(LinkedHashMap<K, MutableList<V>>(), keySelector, valueTransform)\n}\n\n/**\n * Groups values
returned by the [valueTransform] function applied to each element of the original array\n * by the key returned by
the given [keySelector] function applied to the element\n * and returns a map where each group key is associated
with a list of corresponding values.\n * \n * The returned map preserves the entry iteration order of the keys
produced from the original array.\n * \n * @sample
samples.collections.Collections.Transformations.groupByKeysAndValues\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <K, V>
UByteArray.groupBy(keySelector: (UByte) -> K, valueTransform: (UByte) -> V): Map<K, List<V>> {\n    return
groupByTo(LinkedHashMap<K, MutableList<V>>(), keySelector, valueTransform)\n}\n\n/**\n * Groups values
returned by the [valueTransform] function applied to each element of the original array\n * by the key returned by
the given [keySelector] function applied to the element\n * and returns a map where each group key is associated
with a list of corresponding values.\n * \n * The returned map preserves the entry iteration order of the keys
produced from the original array.\n * \n * @sample
samples.collections.Collections.Transformations.groupByKeysAndValues\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <K, V>
UShortArray.groupBy(keySelector: (UShort) -> K, valueTransform: (UShort) -> V): Map<K, List<V>> {\n    return
groupByTo(LinkedHashMap<K, MutableList<V>>(), keySelector, valueTransform)\n}\n\n/**\n * Groups elements
of the original array by the key returned by the given [keySelector] function\n * applied to each element and puts to
the [destination] map each group key associated with a list of corresponding elements.\n * \n * @return The
[destination] map.\n * \n * @sample samples.collections.Collections.Transformations.groupBy\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <K, M :
MutableMap<in K, MutableList<UInt>>> UIntArray.groupByTo(destination: M, keySelector: (UInt) -> K): M {\n
for (element in this) {\n    val key = keySelector(element)\n    val list = destination.getOrPut(key) {
ArrayList<UInt>() }\n    list.add(element)\n }\n return destination\n}\n\n/**\n * Groups elements of the

```

```

original array by the key returned by the given [keySelector] function\n * applied to each element and puts to the
[destination] map each group key associated with a list of corresponding elements.\n * \n * @return The
[destination] map.\n * \n * @sample samples.collections.Collections.Transformations.groupBy\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <K, M :
MutableMap<in K, MutableList<ULong>>> ULongArray.groupByTo(destination: M, keySelector: (ULong) -> K):
M {\n  for (element in this) {\n    val key = keySelector(element)\n    val list = destination.getOrPut(key) {
ArrayList<ULong>() }\n    list.add(element)\n  }\n  return destination\n}\n\n/**\n * Groups elements of the
original array by the key returned by the given [keySelector] function\n * applied to each element and puts to the
[destination] map each group key associated with a list of corresponding elements.\n * \n * @return The
[destination] map.\n * \n * @sample samples.collections.Collections.Transformations.groupBy\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <K, M :
MutableMap<in K, MutableList<UByte>>> UByteArray.groupByTo(destination: M, keySelector: (UByte) -> K):
M {\n  for (element in this) {\n    val key = keySelector(element)\n    val list = destination.getOrPut(key) {
ArrayList<UByte>() }\n    list.add(element)\n  }\n  return destination\n}\n\n/**\n * Groups elements of the
original array by the key returned by the given [keySelector] function\n * applied to each element and puts to the
[destination] map each group key associated with a list of corresponding elements.\n * \n * @return The
[destination] map.\n * \n * @sample samples.collections.Collections.Transformations.groupBy\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <K, M :
MutableMap<in K, MutableList<UShort>>> UShortArray.groupByTo(destination: M, keySelector: (UShort) -> K):
M {\n  for (element in this) {\n    val key = keySelector(element)\n    val list = destination.getOrPut(key) {
ArrayList<UShort>() }\n    list.add(element)\n  }\n  return destination\n}\n\n/**\n * Groups values returned by
the [valueTransform] function applied to each element of the original array\n * by the key returned by the given
[keySelector] function applied to the element\n * and puts to the [destination] map each group key associated with a
list of corresponding values.\n * \n * @return The [destination] map.\n * \n * @sample
samples.collections.Collections.Transformations.groupByKeysAndValues\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <K, V,
M : MutableMap<in K, MutableList<V>>> UIntArray.groupByTo(destination: M, keySelector: (UInt) -> K,
valueTransform: (UInt) -> V): M {\n  for (element in this) {\n    val key = keySelector(element)\n    val list =
destination.getOrPut(key) { ArrayList<V>() }\n    list.add(valueTransform(element))\n  }\n  return
destination\n}\n\n/**\n * Groups values returned by the [valueTransform] function applied to each element of the
original array\n * by the key returned by the given [keySelector] function applied to the element\n * and puts to the
[destination] map each group key associated with a list of corresponding values.\n * \n * @return The [destination]
map.\n * \n * @sample samples.collections.Collections.Transformations.groupByKeysAndValues\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <K, V,
M : MutableMap<in K, MutableList<V>>> ULongArray.groupByTo(destination: M, keySelector: (ULong) -> K,
valueTransform: (ULong) -> V): M {\n  for (element in this) {\n    val key = keySelector(element)\n    val list =
destination.getOrPut(key) { ArrayList<V>() }\n    list.add(valueTransform(element))\n  }\n  return
destination\n}\n\n/**\n * Groups values returned by the [valueTransform] function applied to each element of the
original array\n * by the key returned by the given [keySelector] function applied to the element\n * and puts to the
[destination] map each group key associated with a list of corresponding values.\n * \n * @return The [destination]
map.\n * \n * @sample samples.collections.Collections.Transformations.groupByKeysAndValues\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <K, V,
M : MutableMap<in K, MutableList<V>>> UByteArray.groupByTo(destination: M, keySelector: (UByte) -> K,
valueTransform: (UByte) -> V): M {\n  for (element in this) {\n    val key = keySelector(element)\n    val list =
destination.getOrPut(key) { ArrayList<V>() }\n    list.add(valueTransform(element))\n  }\n  return
destination\n}\n\n/**\n * Groups values returned by the [valueTransform] function applied to each element of the
original array\n * by the key returned by the given [keySelector] function applied to the element\n * and puts to the
[destination] map each group key associated with a list of corresponding values.\n * \n * @return The [destination]

```

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map.\n * \n * @sample samples.collections.Collections.Transformations.groupByKeyAndValues\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <K, V,\n M : MutableMap<in K, MutableList<V>>> UShortArray.groupByTo(destination: M, keySelector: (UShort) -> K,\n valueTransform: (UShort) -> V): M {\n for (element in this) {\n val key = keySelector(element)\n val list\n = destination.getOrPut(key) { ArrayList<V>() }\n list.add(valueTransform(element))\n }\n return\n destination}\n}\n/**\n * Returns a list containing the results of applying the given [transform] function\n * to each\n element in the original array.\n * \n * @sample samples.collections.Collections.Transformations.map\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>\n UIntArray.map(transform: (UInt) -> R): List<R> {\n return mapTo(ArrayList<R>(size), transform)\n}\n}\n/**\n * Returns a list containing the results of applying the given [transform] function\n * to each element in the original\n array.\n * \n * @sample samples.collections.Collections.Transformations.map\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>\n ULongArray.map(transform: (ULong) -> R): List<R> {\n return mapTo(ArrayList<R>(size),\n transform)\n}\n}\n/**\n * Returns a list containing the results of applying the given [transform] function\n * to each\n element in the original array.\n * \n * @sample samples.collections.Collections.Transformations.map\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>\n UByteArray.map(transform: (UByte) -> R): List<R> {\n return mapTo(ArrayList<R>(size),\n transform)\n}\n}\n/**\n * Returns a list containing the results of applying the given [transform] function\n * to each\n element in the original array.\n * \n * @sample samples.collections.Collections.Transformations.map\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>\n UShortArray.map(transform: (UShort) -> R): List<R> {\n return mapTo(ArrayList<R>(size),\n transform)\n}\n}\n/**\n * Returns a list containing the results of applying the given [transform] function\n * to each\n element and its index in the original array.\n * \n * @param [transform] function that takes the index of an element and\n the element itself\n * and returns the result of the transform applied to the element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>\n UIntArray.mapIndexed(transform: (index: Int, UInt) -> R): List<R> {\n return\n mapIndexedTo(ArrayList<R>(size), transform)\n}\n}\n/**\n * Returns a list containing the results of applying the\n given [transform] function\n * to each element and its index in the original array.\n * \n * @param [transform] function\n that takes the index of an element and the element itself\n * and returns the result of the transform applied to the\n element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline\n fun <R> ULongArray.mapIndexed(transform: (index: Int, ULong) -> R): List<R> {\n return\n mapIndexedTo(ArrayList<R>(size), transform)\n}\n}\n/**\n * Returns a list containing the results of applying the\n given [transform] function\n * to each element and its index in the original array.\n * \n * @param [transform] function\n that takes the index of an element and the element itself\n * and returns the result of the transform applied to the\n element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline\n fun <R> UByteArray.mapIndexed(transform: (index: Int, UByte) -> R): List<R> {\n return\n mapIndexedTo(ArrayList<R>(size), transform)\n}\n}\n/**\n * Returns a list containing the results of applying the\n given [transform] function\n * to each element and its index in the original array.\n * \n * @param [transform] function\n that takes the index of an element and the element itself\n * and returns the result of the transform applied to the\n element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline\n fun <R> UShortArray.mapIndexed(transform: (index: Int, UShort) -> R): List<R> {\n return\n mapIndexedTo(ArrayList<R>(size), transform)\n}\n}\n/**\n * Applies the given [transform] function to each\n element and its index in the original array\n * and appends the results to the given [destination].\n * \n * @param\n [transform] function that takes the index of an element and the element itself\n * and returns the result of the\n transform applied to the element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, C : \n MutableCollection<in R>> UIntArray.mapIndexedTo(destination: C, transform: (index: Int, UInt) -> R): C {\n var\n index = 0\n for (item in this)\n destination.add(transform(index++, item))\n return destination}\n}\n/**\n *

```

Applies the given [transform] function to each element and its index in the original array\n \* and appends the results to the given [destination].\n \* @param [transform] function that takes the index of an element and the element itself\n \* and returns the result of the transform applied to the element.\n

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, C : MutableCollection<in R>> ULongArray.mapIndexedTo(destination: C, transform: (index: Int, ULong) -> R): C {\n    var index = 0\n    for (item in this)\n        destination.add(transform(index++, item))\n    return
```

```
destination\n}\n\n/**\n * Applies the given [transform] function to each element and its index in the original array\n * and appends the results to the given [destination].\n * @param [transform] function that takes the index of an element and the element itself\n * and returns the result of the transform applied to the element.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, C : MutableCollection<in R>> UByteArray.mapIndexedTo(destination: C, transform: (index: Int, UByte) -> R): C {\n    var index = 0\n    for (item in this)\n        destination.add(transform(index++, item))\n    return
```

```
destination\n}\n\n/**\n * Applies the given [transform] function to each element and its index in the original array\n * and appends the results to the given [destination].\n * @param [transform] function that takes the index of an element and the element itself\n * and returns the result of the transform applied to the element.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, C : MutableCollection<in R>> UShortArray.mapIndexedTo(destination: C, transform: (index: Int, UShort) -> R): C {\n    var index = 0\n    for (item in this)\n        destination.add(transform(index++, item))\n    return
```

```
destination\n}\n\n/**\n * Applies the given [transform] function to each element of the original array\n * and appends the results to the given [destination].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, C : MutableCollection<in R>> UIntArray.mapTo(destination: C, transform: (UInt) -> R): C {\n    for (item in this)\n        destination.add(transform(item))\n    return destination\n}\n\n/**\n * Applies the given [transform] function to each element of the original array\n * and appends the results to the given [destination].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, C : MutableCollection<in R>> ULongArray.mapTo(destination: C, transform: (ULong) -> R): C {\n    for (item in this)\n        destination.add(transform(item))\n    return destination\n}\n\n/**\n * Applies the given [transform] function to each element of the original array\n * and appends the results to the given [destination].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, C : MutableCollection<in R>> UByteArray.mapTo(destination: C, transform: (UByte) -> R): C {\n    for (item in this)\n        destination.add(transform(item))\n    return destination\n}\n\n/**\n * Applies the given [transform] function to each element of the original array\n * and appends the results to the given [destination].\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, C : MutableCollection<in R>> UShortArray.mapTo(destination: C, transform: (UShort) -> R): C {\n    for (item in this)\n        destination.add(transform(item))\n    return destination\n}\n\n/**\n * Returns a lazy [Iterable] that wraps each element of the original array\n * into an [IndexedValue] containing the index of that element and the element itself.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.withIndex():
```

```
Iterable<IndexedValue<UInt>> {\n    return IndexingIterable { iterator() }\n}\n\n/**\n * Returns a lazy [Iterable] that wraps each element of the original array\n * into an [IndexedValue] containing the index of that element and the element itself.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.withIndex(): Iterable<IndexedValue<ULong>> {\n    return IndexingIterable { iterator() }\n}\n\n/**\n * Returns a lazy [Iterable] that wraps each element of the original array\n * into an [IndexedValue] containing the index of that element and the element itself.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.withIndex(): Iterable<IndexedValue<UByte>> {\n    return IndexingIterable { iterator() }\n}\n\n/**\n * Returns a lazy [Iterable] that wraps each element of the original array\n * into an [IndexedValue] containing the index of that element and the element itself.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.withIndex(): Iterable<IndexedValue<UShort>> {\n    return IndexingIterable { iterator() }\n}\n\n/**\n * Returns `true` if all elements match the given [predicate].\n * @sample samples.collections.Collections.Aggregates.all\n
```

```

*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.all(predicate: (UInt) -> Boolean): Boolean {\n  for (element in this) if (!predicate(element)) return
false\n  return true\n}\n\n/**\n * Returns `true` if all elements match the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.all\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.all(predicate: (ULong) -> Boolean): Boolean {\n  for (element in this) if (!predicate(element)) return
false\n  return true\n}\n\n/**\n * Returns `true` if all elements match the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.all\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.all(predicate: (UByte) -> Boolean): Boolean {\n  for (element in this) if (!predicate(element)) return
false\n  return true\n}\n\n/**\n * Returns `true` if all elements match the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.all\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.all(predicate: (UShort) -> Boolean): Boolean {\n  for (element in this) if (!predicate(element)) return
false\n  return true\n}\n\n/**\n * Returns `true` if array has at least one element.\n * \n * @sample
samples.collections.Collections.Aggregates.any\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.any(): Boolean {\n  return storage.any()\n}\n\n/**\n * Returns `true` if array has at least one element.\n
*\n * @sample samples.collections.Collections.Aggregates.any\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.any(): Boolean {\n  return storage.any()\n}\n\n/**\n * Returns `true` if array has at least one
element.\n * \n * @sample samples.collections.Collections.Aggregates.any\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.any(): Boolean {\n  return storage.any()\n}\n\n/**\n * Returns `true` if array has at least one
element.\n * \n * @sample samples.collections.Collections.Aggregates.any\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.any(): Boolean {\n  return storage.any()\n}\n\n/**\n * Returns `true` if at least one element matches
the given [predicate].\n * \n * @sample samples.collections.Collections.Aggregates.anyWithPredicate\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.any(predicate: (UInt) -> Boolean): Boolean {\n  for (element in this) if (predicate(element)) return true\n
  return false\n}\n\n/**\n * Returns `true` if at least one element matches the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.anyWithPredicate\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.any(predicate: (ULong) -> Boolean): Boolean {\n  for (element in this) if (predicate(element)) return
true\n  return false\n}\n\n/**\n * Returns `true` if at least one element matches the given [predicate].\n * \n *
@sample samples.collections.Collections.Aggregates.anyWithPredicate\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.any(predicate: (UByte) -> Boolean): Boolean {\n  for (element in this) if (predicate(element)) return
true\n  return false\n}\n\n/**\n * Returns `true` if at least one element matches the given [predicate].\n * \n *
@sample samples.collections.Collections.Aggregates.anyWithPredicate\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.any(predicate: (UShort) -> Boolean): Boolean {\n  for (element in this) if (predicate(element)) return
true\n  return false\n}\n\n/**\n * Returns the number of elements matching the given [predicate].\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.count(predicate: (UInt) -> Boolean): Int {\n  var count = 0\n  for (element in this) if
(predicate(element)) ++count\n  return count\n}\n\n/**\n * Returns the number of elements matching the given
[predicate].\n * \n *\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic
inline fun ULongArray.count(predicate: (ULong) -> Boolean): Int {\n  var count = 0\n  for (element in this) if

```



```

(predicate(element)) ++count\n    return count\n}\n\n/**\n * Returns the number of elements matching the given
[predicate].\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public
inline fun UByteArray.count(predicate: (UByte) -> Boolean): Int {\n    var count = 0\n    for (element in this) if
(predicate(element)) ++count\n    return count\n}\n\n/**\n * Returns the number of elements matching the given
[predicate].\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public
inline fun UShortArray.count(predicate: (UShort) -> Boolean): Int {\n    var count = 0\n    for (element in this) if
(predicate(element)) ++count\n    return count\n}\n\n/**\n * Accumulates value starting with [initial] value and
applying [operation] from left to right to current accumulator value and each element.\n
*\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun <R>
UIntArray.fold(initial: R, operation: (acc: R, UInt) -> R): R {\n    var accumulator = initial\n    for (element in this)
accumulator = operation(accumulator, element)\n    return accumulator\n}\n\n/**\n * Accumulates value starting
with [initial] value and applying [operation] from left to right to current accumulator value and each element.\n
*\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun <R>
ULongArray.fold(initial: R, operation: (acc: R, ULong) -> R): R {\n    var accumulator = initial\n    for (element in
this) accumulator = operation(accumulator, element)\n    return accumulator\n}\n\n/**\n * Accumulates value
starting with [initial] value and applying [operation] from left to right to current accumulator value and each
element.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline
fun <R> UByteArray.fold(initial: R, operation: (acc: R, UByte) -> R): R {\n    var accumulator = initial\n    for
(element in this) accumulator = operation(accumulator, element)\n    return accumulator\n}\n\n/**\n * Accumulates
value starting with [initial] value and applying [operation] from left to right to current accumulator value and each
element.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline
fun <R> UShortArray.fold(initial: R, operation: (acc: R, UShort) -> R): R {\n    var accumulator = initial\n    for
(element in this) accumulator = operation(accumulator, element)\n    return accumulator\n}\n\n/**\n * Accumulates
value starting with [initial] value and applying [operation] from left to right\n * to current accumulator value and
each element with its index in the original array.\n * @param [operation] function that takes the index of an element,
current accumulator value\n * and the element itself, and calculates the next accumulator value.\n
*\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun <R>
UIntArray.foldIndexed(initial: R, operation: (index: Int, acc: R, UInt) -> R): R {\n    var index = 0\n    var
accumulator = initial\n    for (element in this) accumulator = operation(index++, accumulator, element)\n    return
accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying [operation] from left to
right\n * to current accumulator value and each element with its index in the original array.\n * @param [operation]
function that takes the index of an element, current accumulator value\n * and the element itself, and calculates the
next accumulator value.\n
*\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun <R>
ULongArray.foldIndexed(initial: R, operation: (index: Int, acc: R, ULong) -> R): R {\n    var index = 0\n    var
accumulator = initial\n    for (element in this) accumulator = operation(index++, accumulator, element)\n    return
accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying [operation] from left to
right\n * to current accumulator value and each element with its index in the original array.\n * @param [operation]
function that takes the index of an element, current accumulator value\n * and the element itself, and calculates the
next accumulator value.\n
*\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun <R>
UByteArray.foldIndexed(initial: R, operation: (index: Int, acc: R, UByte) -> R): R {\n    var index = 0\n    var
accumulator = initial\n    for (element in this) accumulator = operation(index++, accumulator, element)\n    return
accumulator\n}\n\n/**\n * Accumulates value starting with [initial] value and applying [operation] from left to
right\n * to current accumulator value and each element with its index in the original array.\n * @param [operation]
function that takes the index of an element, current accumulator value\n * and the element itself, and calculates the
next accumulator value.\n
*\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun <R>

```

UShortArray.foldIndexed(initial: R, operation: (index: Int, acc: R, UShort) -> R): R {  
var index = 0  
var accumulator = initial  
for (element in this) accumulator = operation(index++, accumulator, element)  
return accumulator  
}  
\* Accumulates value starting with [initial] value and applying [operation] from right to left to each element and current accumulator value.

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>\nUIntArray.foldRight(initial: R, operation: (UInt, acc: R) -> R): R {\n    var index = lastIndex\n    var accumulator = initial\n    while (index >= 0) {\n        accumulator = operation(get(index--), accumulator)\n    }\n    return accumulator\n}\n * Accumulates value starting with [initial] value and applying [operation] from right to left to each element and current accumulator value.
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>\nULongArray.foldRight(initial: R, operation: (ULong, acc: R) -> R): R {\n    var index = lastIndex\n    var accumulator = initial\n    while (index >= 0) {\n        accumulator = operation(get(index--), accumulator)\n    }\n    return accumulator\n}\n * Accumulates value starting with [initial] value and applying [operation] from right to left to each element and current accumulator value.
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>\nByteArray.foldRight(initial: R, operation: (Byte, acc: R) -> R): R {\n    var index = lastIndex\n    var accumulator = initial\n    while (index >= 0) {\n        accumulator = operation(get(index--), accumulator)\n    }\n    return accumulator\n}\n * Accumulates value starting with [initial] value and applying [operation] from right to left to each element and current accumulator value.
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>\nUShortArray.foldRight(initial: R, operation: (UShort, acc: R) -> R): R {\n    var index = lastIndex\n    var accumulator = initial\n    while (index >= 0) {\n        accumulator = operation(get(index--), accumulator)\n    }\n    return accumulator\n}\n * Accumulates value starting with [initial] value and applying [operation] from right to left to each element with its index in the original array and current accumulator value.\n * @param [operation] function that takes the index of an element, the element itself and current accumulator value, and calculates the next accumulator value.
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>\nUIntArray.foldRightIndexed(initial: R, operation: (index: Int, UInt, acc: R) -> R): R {\n    var index = lastIndex\n    var accumulator = initial\n    while (index >= 0) {\n        accumulator = operation(index, get(index), accumulator)\n        --index\n    }\n    return accumulator\n}\n * Accumulates value starting with [initial] value and applying [operation] from right to left to each element with its index in the original array and current accumulator value.\n * @param [operation] function that takes the index of an element, the element itself and current accumulator value, and calculates the next accumulator value.
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>\nULongArray.foldRightIndexed(initial: R, operation: (index: Int, ULong, acc: R) -> R): R {\n    var index = lastIndex\n    var accumulator = initial\n    while (index >= 0) {\n        accumulator = operation(index, get(index), accumulator)\n        --index\n    }\n    return accumulator\n}\n * Accumulates value starting with [initial] value and applying [operation] from right to left to each element with its index in the original array and current accumulator value.\n * @param [operation] function that takes the index of an element, the element itself and current accumulator value, and calculates the next accumulator value.
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>\nByteArray.foldRightIndexed(initial: R, operation: (index: Int, Byte, acc: R) -> R): R {\n    var index = lastIndex\n    var accumulator = initial\n    while (index >= 0) {\n        accumulator = operation(index, get(index), accumulator)\n        --index\n    }\n    return accumulator\n}\n * Accumulates value starting with [initial] value and applying [operation] from right to left to each element with its index in the original array and current accumulator value.\n * @param [operation] function that takes the index of an element, the element itself and current accumulator value, and calculates the next accumulator value.
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>
```

```

UShortArray.foldRightIndexed(initial: R, operation: (index: Int, UShort, acc: R) -> R): R {
    var index = lastIndex
    var accumulator = initial
    while (index >= 0) {
        accumulator = operation(index, get(index), accumulator)
        --index
    }
    return accumulator
}
*n * Performs the given [action] on each element.
*
*
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun UIntArray.forEach(action: (UInt) -> Unit): Unit {
    for (element in this) action(element)
}
*n * Performs the given [action] on each element.
*
*
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun ULongArray.forEach(action: (ULong) -> Unit): Unit {
    for (element in this) action(element)
}
*n * Performs the given [action] on each element.
*
*
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun UByteArray.forEach(action: (UByte) -> Unit): Unit {
    for (element in this) action(element)
}
*n * Performs the given [action] on each element.
*
*
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun UShortArray.forEach(action: (UShort) -> Unit): Unit {
    for (element in this) action(element)
}
*n * Performs the given [action] on each element, providing sequential index with the element.
* @param [action] function that takes the index of an element and the element itself
* and performs the desired action on the element.
*
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun UIntArray.forEachIndexed(action: (index: Int, UInt) -> Unit): Unit {
    var index = 0
    for (item in this) action(index++, item)
}
*n * Performs the given [action] on each element, providing sequential index with the element.
* @param [action] function that takes the index of an element and the element itself
* and performs the desired action on the element.
*
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun ULongArray.forEachIndexed(action: (index: Int, ULong) -> Unit): Unit {
    var index = 0
    for (item in this) action(index++, item)
}
*n * Performs the given [action] on each element, providing sequential index with the element.
* @param [action] function that takes the index of an element and the element itself
* and performs the desired action on the element.
*
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun UByteArray.forEachIndexed(action: (index: Int, UByte) -> Unit): Unit {
    var index = 0
    for (item in this) action(index++, item)
}
*n * Performs the given [action] on each element, providing sequential index with the element.
* @param [action] function that takes the index of an element and the element itself
* and performs the desired action on the element.
*
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun UShortArray.forEachIndexed(action: (index: Int, UShort) -> Unit): Unit {
    var index = 0
    for (item in this) action(index++, item)
}
*n * Returns the largest element or `null` if there are no elements.
*
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun UIntArray.max(): UInt? {
    if (isEmpty()) return null
    var max = this[0]
    for (i in 1..lastIndex) {
        val e = this[i]
        if (max < e) max = e
    }
    return max
}
*n * Returns the largest element or `null` if there are no elements.
*
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun ULongArray.max(): ULong? {
    if (isEmpty()) return null
    var max = this[0]
    for (i in 1..lastIndex) {
        val e = this[i]
        if (max < e) max = e
    }
    return max
}
*n * Returns the largest element or `null` if there are no elements.
*
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun UByteArray.max(): UByte? {
    if (isEmpty()) return null
    var max = this[0]
    for (i in 1..lastIndex) {
        val e = this[i]
        if (max < e) max = e
    }
    return max
}
*n * Returns the largest element or `null` if there are no elements.
*
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun UShortArray.max(): UShort? {
    if (isEmpty()) return null
    var max = this[0]
    for (i in 1..lastIndex) {
        val e = this[i]
        if (max < e) max = e
    }
    return max
}
*n * Returns the first element yielding the largest value of the given function or `null` if there are no elements.
*
*n * @sample samples.collections.Collections.Aggregates.maxBy
*
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun <R :

```

```

Comparable<R>> UIntArray.maxBy(selector: (UInt) -> R): UInt? {\n  if (isEmpty()) return null\n  var maxElem
= this[0]\n  val lastIndex = this.lastIndex\n  if (lastIndex == 0) return maxElem\n  var maxValue =
selector(maxElem)\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (maxValue < v)
{\n      maxElem = e\n      maxValue = v\n    }\n  }\n  return maxElem\n}\n\n/**\n * Returns the first
element yielding the largest value of the given function or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.maxBy\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R :
Comparable<R>> ULongArray.maxBy(selector: (ULong) -> R): ULong? {\n  if (isEmpty()) return null\n  var
maxElem = this[0]\n  val lastIndex = this.lastIndex\n  if (lastIndex == 0) return maxElem\n  var maxValue =
selector(maxElem)\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (maxValue < v)
{\n      maxElem = e\n      maxValue = v\n    }\n  }\n  return maxElem\n}\n\n/**\n * Returns the first
element yielding the largest value of the given function or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.maxBy\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R :
Comparable<R>> UByteArray.maxBy(selector: (UByte) -> R): UByte? {\n  if (isEmpty()) return null\n  var
maxElem = this[0]\n  val lastIndex = this.lastIndex\n  if (lastIndex == 0) return maxElem\n  var maxValue =
selector(maxElem)\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (maxValue < v)
{\n      maxElem = e\n      maxValue = v\n    }\n  }\n  return maxElem\n}\n\n/**\n * Returns the first
element yielding the largest value of the given function or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.maxBy\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R :
Comparable<R>> UShortArray.maxBy(selector: (UShort) -> R): UShort? {\n  if (isEmpty()) return null\n  var
maxElem = this[0]\n  val lastIndex = this.lastIndex\n  if (lastIndex == 0) return maxElem\n  var maxValue =
selector(maxElem)\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (maxValue < v)
{\n      maxElem = e\n      maxValue = v\n    }\n  }\n  return maxElem\n}\n\n/**\n * Returns the first
element having the largest value according to the provided [comparator] or `null` if there are no elements.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.maxWith(comparator:
Comparator<in UInt>): UInt? {\n  if (isEmpty()) return null\n  var max = this[0]\n  for (i in 1..lastIndex) {\n
val e = this[i]\n    if (comparator.compare(max, e) < 0) max = e\n  }\n  return max\n}\n\n/**\n * Returns the
first element having the largest value according to the provided [comparator] or `null` if there are no elements.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.maxWith(comparator:
Comparator<in ULong>): ULong? {\n  if (isEmpty()) return null\n  var max = this[0]\n  for (i in 1..lastIndex) {\n
val e = this[i]\n    if (comparator.compare(max, e) < 0) max = e\n  }\n  return max\n}\n\n/**\n * Returns the
first element having the largest value according to the provided [comparator] or `null` if there are no elements.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.maxWith(comparator:
Comparator<in UByte>): UByte? {\n  if (isEmpty()) return null\n  var max = this[0]\n  for (i in 1..lastIndex) {\n
val e = this[i]\n    if (comparator.compare(max, e) < 0) max = e\n  }\n  return max\n}\n\n/**\n * Returns the
first element having the largest value according to the provided [comparator] or `null` if there are no elements.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.maxWith(comparator:
Comparator<in UShort>): UShort? {\n  if (isEmpty()) return null\n  var max = this[0]\n  for (i in 1..lastIndex) {\n
val e = this[i]\n    if (comparator.compare(max, e) < 0) max = e\n  }\n  return max\n}\n\n/**\n * Returns the
smallest element or `null` if there are no elements.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.min(): UInt? {\n  if (isEmpty())
return null\n  var min = this[0]\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    if (min > e) min = e\n  }\n
return min\n}\n\n/**\n * Returns the smallest element or `null` if there are no elements.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.min(): ULong? {\n  if
(isEmpty()) return null\n  var min = this[0]\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    if (min > e) min =
e\n  }\n  return min\n}\n\n/**\n * Returns the smallest element or `null` if there are no elements.\n

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*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.min(): UByte? {\n if
(isEmpty()) return null\n var min = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if (min > e) min =
e\n }\n return min\n}\n\n/**\n * Returns the smallest element or `null` if there are no elements.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.min(): UShort? {\n if
(isEmpty()) return null\n var min = this[0]\n for (i in 1..lastIndex) {\n val e = this[i]\n if (min > e) min =
e\n }\n return min\n}\n\n/**\n * Returns the first element yielding the smallest value of the given function or
`null` if there are no elements.\n * \n * @sample samples.collections.Collections.Aggregates.minBy\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R :
Comparable<R>> UIntArray.minBy(selector: (UInt) -> R): UInt? {\n if (isEmpty()) return null\n var minElem =
this[0]\n val lastIndex = this.lastIndex\n if (lastIndex == 0) return minElem\n var minValue =
selector(minElem)\n for (i in 1..lastIndex) {\n val e = this[i]\n val v = selector(e)\n if (minValue > v)
{\n minElem = e\n minValue = v\n }\n }\n return minElem\n}\n\n/**\n * Returns the first
element yielding the smallest value of the given function or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.minBy\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R :
Comparable<R>> ULongArray.minBy(selector: (ULong) -> R): ULong? {\n if (isEmpty()) return null\n var
minElem = this[0]\n val lastIndex = this.lastIndex\n if (lastIndex == 0) return minElem\n var minValue =
selector(minElem)\n for (i in 1..lastIndex) {\n val e = this[i]\n val v = selector(e)\n if (minValue > v)
{\n minElem = e\n minValue = v\n }\n }\n return minElem\n}\n\n/**\n * Returns the first
element yielding the smallest value of the given function or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.minBy\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R :
Comparable<R>> UByteArray.minBy(selector: (UByte) -> R): UByte? {\n if (isEmpty()) return null\n var
minElem = this[0]\n val lastIndex = this.lastIndex\n if (lastIndex == 0) return minElem\n var minValue =
selector(minElem)\n for (i in 1..lastIndex) {\n val e = this[i]\n val v = selector(e)\n if (minValue > v)
{\n minElem = e\n minValue = v\n }\n }\n return minElem\n}\n\n/**\n * Returns the first
element yielding the smallest value of the given function or `null` if there are no elements.\n * \n * @sample
samples.collections.Collections.Aggregates.minBy\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R :
Comparable<R>> UShortArray.minBy(selector: (UShort) -> R): UShort? {\n if (isEmpty()) return null\n var
minElem = this[0]\n val lastIndex = this.lastIndex\n if (lastIndex == 0) return minElem\n var minValue =
selector(minElem)\n for (i in 1..lastIndex) {\n val e = this[i]\n val v = selector(e)\n if (minValue > v)
{\n minElem = e\n minValue = v\n }\n }\n return minElem\n}\n\n/**\n * Returns the first
element having the smallest value according to the provided [comparator] or `null` if there are no elements.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.minWith(comparator:
Comparator<in UInt>): UInt? {\n if (isEmpty()) return null\n var min = this[0]\n for (i in 1..lastIndex) {\n
val e = this[i]\n if (comparator.compare(min, e) > 0) min = e\n }\n return min\n}\n\n/**\n * Returns the first
element having the smallest value according to the provided [comparator] or `null` if there are no elements.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.minWith(comparator:
Comparator<in ULong>): ULong? {\n if (isEmpty()) return null\n var min = this[0]\n for (i in 1..lastIndex) {\n
val e = this[i]\n if (comparator.compare(min, e) > 0) min = e\n }\n return min\n}\n\n/**\n * Returns the
first element having the smallest value according to the provided [comparator] or `null` if there are no elements.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.minWith(comparator:
Comparator<in UByte>): UByte? {\n if (isEmpty()) return null\n var min = this[0]\n for (i in 1..lastIndex) {\n
val e = this[i]\n if (comparator.compare(min, e) > 0) min = e\n }\n return min\n}\n\n/**\n * Returns the
first element having the smallest value according to the provided [comparator] or `null` if there are no elements.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.minWith(comparator:
Comparator<in UShort>): UShort? {\n if (isEmpty()) return null\n var min = this[0]\n for (i in 1..lastIndex) {\n

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    val e = this[i]\n    if (comparator.compare(min, e) > 0) min = e\n    }\n    return min\n}\n\n/**\n * Returns
`true` if the array has no elements.\n * \n * @sample samples.collections.Collections.Aggregates.none\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.none(): Boolean {\n    return isEmpty()\n}\n\n/**\n * Returns `true` if the array has no elements.\n * \n *
@sample samples.collections.Collections.Aggregates.none\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.none(): Boolean {\n    return isEmpty()\n}\n\n/**\n * Returns `true` if the array has no elements.\n * \n *
@sample samples.collections.Collections.Aggregates.none\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.none(): Boolean {\n    return isEmpty()\n}\n\n/**\n * Returns `true` if the array has no elements.\n * \n *
@sample samples.collections.Collections.Aggregates.none\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.none(): Boolean {\n    return isEmpty()\n}\n\n/**\n * Returns `true` if no elements match the given
[predicate].\n * \n * @sample samples.collections.Collections.Aggregates.noneWithPredicate\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.none(predicate: (UInt) -> Boolean): Boolean {\n    for (element in this) if (predicate(element)) return
false\n    return true\n}\n\n/**\n * Returns `true` if no elements match the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.noneWithPredicate\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.none(predicate: (ULong) -> Boolean): Boolean {\n    for (element in this) if (predicate(element)) return
false\n    return true\n}\n\n/**\n * Returns `true` if no elements match the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.noneWithPredicate\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.none(predicate: (UByte) -> Boolean): Boolean {\n    for (element in this) if (predicate(element)) return
false\n    return true\n}\n\n/**\n * Returns `true` if no elements match the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.noneWithPredicate\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.none(predicate: (UShort) -> Boolean): Boolean {\n    for (element in this) if (predicate(element))
return false\n    return true\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation]
from left to right to current accumulator value and each element.\n * \n * @sample
samples.collections.Collections.Aggregates.reduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.reduce(operation: (acc: UInt, UInt) -> UInt): UInt {\n    if (isEmpty())\n        throw
UnsupportedOperationException("Empty array can't be reduced.")\n    var accumulator = this[0]\n    for (index in
1..lastIndex) {\n        accumulator = operation(accumulator, this[index])\n    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to right to current accumulator
value and each element.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.reduce(operation: (acc: ULong, ULong) -> ULong): ULong {\n    if (isEmpty())\n        throw
UnsupportedOperationException("Empty array can't be reduced.")\n    var accumulator = this[0]\n    for (index in
1..lastIndex) {\n        accumulator = operation(accumulator, this[index])\n    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to right to current accumulator
value and each element.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.reduce(operation: (acc: UByte, UByte) -> UByte): UByte {\n    if (isEmpty())\n        throw
UnsupportedOperationException("Empty array can't be reduced.")\n    var accumulator = this[0]\n    for (index in
1..lastIndex) {\n        accumulator = operation(accumulator, this[index])\n    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to right to current accumulator
value and each element.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n

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value and each element.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.reduce(operation: (acc: UShort, UShort) -> UShort): UShort {\n if (isEmpty())\n throw
UnsupportedOperationException("Empty array can't be reduced.")\n var accumulator = this[0]\n for (index in
1..lastIndex) {\n accumulator = operation(accumulator, this[index])\n }\n return accumulator\n}\n\n/**\n *
Accumulates value starting with the first element and applying [operation] from left to right\n * to current
accumulator value and each element with its index in the original array.\n * @param [operation] function that takes
the index of an element, current accumulator value\n * and the element itself and calculates the next accumulator
value.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.reduceIndexed(operation: (index: Int, acc: UInt, UInt) -> UInt): UInt {\n if (isEmpty())\n throw
UnsupportedOperationException("Empty array can't be reduced.")\n var accumulator = this[0]\n for (index in
1..lastIndex) {\n accumulator = operation(index, accumulator, this[index])\n }\n return
accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to
right\n * to current accumulator value and each element with its index in the original array.\n * @param [operation]
function that takes the index of an element, current accumulator value\n * and the element itself and calculates the
next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.reduceIndexed(operation: (index: Int, acc: ULong, ULong) -> ULong): ULong {\n if (isEmpty())\n
throw UnsupportedOperationException("Empty array can't be reduced.")\n var accumulator = this[0]\n for
(index in 1..lastIndex) {\n accumulator = operation(index, accumulator, this[index])\n }\n return
accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to
right\n * to current accumulator value and each element with its index in the original array.\n * @param [operation]
function that takes the index of an element, current accumulator value\n * and the element itself and calculates the
next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.reduceIndexed(operation: (index: Int, acc: UByte, UByte) -> UByte): UByte {\n if (isEmpty())\n
throw UnsupportedOperationException("Empty array can't be reduced.")\n var accumulator = this[0]\n for
(index in 1..lastIndex) {\n accumulator = operation(index, accumulator, this[index])\n }\n return
accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to
right\n * to current accumulator value and each element with its index in the original array.\n * @param [operation]
function that takes the index of an element, current accumulator value\n * and the element itself and calculates the
next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.reduceIndexed(operation: (index: Int, acc: UShort, UShort) -> UShort): UShort {\n if (isEmpty())\n
throw UnsupportedOperationException("Empty array can't be reduced.")\n var accumulator = this[0]\n for
(index in 1..lastIndex) {\n accumulator = operation(index, accumulator, this[index])\n }\n return
accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left to
right to current accumulator value and each element. Returns null if the array is empty.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\npublic inline fun UIntArray.reduceOrNull(operation: (acc: UInt, UInt) -> UInt): UInt? {\n if (isEmpty())\n
return null\n var accumulator = this[0]\n for (index in 1..lastIndex) {\n accumulator =
operation(accumulator, this[index])\n }\n return accumulator\n}\n\n/**\n * Accumulates value starting with the
first element and applying [operation] from left to right to current accumulator value and each element. Returns null
if the array is empty.\n * \n * @sample samples.collections.Collections.Aggregates.reduceOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\npublic inline fun ULongArray.reduceOrNull(operation: (acc: ULong, ULong) -> ULong): ULong? {\n if

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(isEmpty())\n    return null\n    var accumulator = this[0]\n    for (index in 1..lastIndex) {\n        accumulator =
operation(accumulator, this[index])\n    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting with the
first element and applying [operation] from left to right to current accumulator value and each element. Returns null
if the array is empty.\n * \n * @sample samples.collections.Collections.Aggregates.reduceOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\npublic inline fun UByteArray.reduceOrNull(operation: (acc: UByte, UByte) -> UByte): UByte? {\n    if
(isEmpty())\n        return null\n        var accumulator = this[0]\n        for (index in 1..lastIndex) {\n            accumulator =
operation(accumulator, this[index])\n        }\n        return accumulator\n}\n\n/**\n * Accumulates value starting with the
first element and applying [operation] from left to right to current accumulator value and each element. Returns null
if the array is empty.\n * \n * @sample samples.collections.Collections.Aggregates.reduceOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\npublic inline fun UShortArray.reduceOrNull(operation: (acc: UShort, UShort) -> UShort): UShort? {\n    if
(isEmpty())\n        return null\n        var accumulator = this[0]\n        for (index in 1..lastIndex) {\n            accumulator =
operation(accumulator, this[index])\n        }\n        return accumulator\n}\n\n/**\n * Accumulates value starting with last
element and applying [operation] from right to left to each element and current accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRight\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.reduceRight(operation: (UInt, acc: UInt) -> UInt): UInt {\n    var index = lastIndex\n    if (index < 0)
throw UnsupportedOperationException("Empty array can't be reduced.")\n    var accumulator = get(index--)\n    while (index >= 0) {\n        accumulator = operation(get(index--), accumulator)\n    }\n    return
accumulator\n}\n\n/**\n * Accumulates value starting with last element and applying [operation] from right to left
to each element and current accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRight\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.reduceRight(operation: (ULong, acc: ULong) -> ULong): ULong {\n    var index = lastIndex\n    if
(index < 0) throw UnsupportedOperationException("Empty array can't be reduced.")\n    var accumulator =
get(index--)\n    while (index >= 0) {\n        accumulator = operation(get(index--), accumulator)\n    }\n    return
accumulator\n}\n\n/**\n * Accumulates value starting with last element and applying [operation] from right to left
to each element and current accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRight\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.reduceRight(operation: (UByte, acc: UByte) -> UByte): UByte {\n    var index = lastIndex\n    if (index
< 0) throw UnsupportedOperationException("Empty array can't be reduced.")\n    var accumulator = get(index--)\n    while (index >= 0) {\n        accumulator = operation(get(index--), accumulator)\n    }\n    return
accumulator\n}\n\n/**\n * Accumulates value starting with last element and applying [operation] from right to left
to each element and current accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRight\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.reduceRight(operation: (UShort, acc: UShort) -> UShort): UShort {\n    var index = lastIndex\n    if
(index < 0) throw UnsupportedOperationException("Empty array can't be reduced.")\n    var accumulator =
get(index--)\n    while (index >= 0) {\n        accumulator = operation(get(index--), accumulator)\n    }\n    return
accumulator\n}\n\n/**\n * Accumulates value starting with last element and applying [operation] from right to left\n
* to each element with its index in the original array and current accumulator value.\n * @param [operation]
function that takes the index of an element, the element itself\n * and current accumulator value, and calculates the
next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduceRight\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.reduceRightIndexed(operation: (index: Int, UInt, acc: UInt) -> UInt): UInt {\n    var index = lastIndex\n    if
(index < 0) throw UnsupportedOperationException("Empty array can't be reduced.")\n    var accumulator =

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get(index--)\n while (index >= 0) {\n accumulator = operation(index, get(index), accumulator)\n --index\n }
\n return accumulator\n}\n\n/**\n * Accumulates value starting with last element and applying [operation] from
right to left\n * to each element with its index in the original array and current accumulator value.\n * @param
[operation] function that takes the index of an element, the element itself\n * and current accumulator value, and
calculates the next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.reduceRight\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.reduceRightIndexed(operation: (index: Int, ULong, acc: ULong) -> ULong): ULong {\n var index =
lastIndex\n if (index < 0) throw UnsupportedOperationException("Empty array can't be reduced.")\n var
accumulator = get(index--)\n while (index >= 0) {\n accumulator = operation(index, get(index),
accumulator)\n --index\n }\n return accumulator\n}\n\n/**\n * Accumulates value starting with last element
and applying [operation] from right to left\n * to each element with its index in the original array and current
accumulator value.\n * @param [operation] function that takes the index of an element, the element itself\n * and
current accumulator value, and calculates the next accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRight\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.reduceRightIndexed(operation: (index: Int, UByte, acc: UByte) -> UByte): UByte {\n var index =
lastIndex\n if (index < 0) throw UnsupportedOperationException("Empty array can't be reduced.")\n var
accumulator = get(index--)\n while (index >= 0) {\n accumulator = operation(index, get(index),
accumulator)\n --index\n }\n return accumulator\n}\n\n/**\n * Accumulates value starting with last element
and applying [operation] from right to left\n * to each element with its index in the original array and current
accumulator value.\n * @param [operation] function that takes the index of an element, the element itself\n * and
current accumulator value, and calculates the next accumulator value.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRight\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.reduceRightIndexed(operation: (index: Int, UShort, acc: UShort) -> UShort): UShort {\n var index =
lastIndex\n if (index < 0) throw UnsupportedOperationException("Empty array can't be reduced.")\n var
accumulator = get(index--)\n while (index >= 0) {\n accumulator = operation(index, get(index),
accumulator)\n --index\n }\n return accumulator\n}\n\n/**\n * Accumulates value starting with last element
and applying [operation] from right to left to each element and current accumulator value. Returns null if the array is
empty.\n * \n * @sample samples.collections.Collections.Aggregates.reduceRightOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\npublic inline fun UIntArray.reduceRightOrNull(operation: (UInt, acc: UInt) -> UInt): UInt? {\n var index =
lastIndex\n if (index < 0) return null\n var accumulator = get(index--)\n while (index >= 0) {\n
accumulator = operation(get(index--), accumulator)\n }\n return accumulator\n}\n\n/**\n * Accumulates value
starting with last element and applying [operation] from right to left to each element and current accumulator value.
Returns null if the array is empty.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRightOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\npublic inline fun ULongArray.reduceRightOrNull(operation: (ULong, acc: ULong) -> ULong): ULong? {\n var
index = lastIndex\n if (index < 0) return null\n var accumulator = get(index--)\n while (index >= 0) {\n
accumulator = operation(get(index--), accumulator)\n }\n return accumulator\n}\n\n/**\n * Accumulates value
starting with last element and applying [operation] from right to left to each element and current accumulator value.
Returns null if the array is empty.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRightOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\npublic inline fun UByteArray.reduceRightOrNull(operation: (UByte, acc: UByte) -> UByte): UByte? {\n var
index = lastIndex\n if (index < 0) return null\n var accumulator = get(index--)\n while (index >= 0) {\n
accumulator = operation(get(index--), accumulator)\n }\n return accumulator\n}\n\n/**\n * Accumulates value

```

starting with last element and applying [operation] from right to left to each element and current accumulator value.

Returns null if the array is empty.\n \* \n \* @sample

samples.collections.Collections.Aggregates.reduceRightOrNull\n

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UShortArray.reduceRightOrNull(operation: (UShort, acc: UShort) -> UShort): UShort? {\n    var index = lastIndex\n    if (index < 0) return null\n    var accumulator = get(index--)\n    while (index >= 0) {\n        accumulator = operation(get(index--), accumulator)\n    }\n    return accumulator\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying [operation] from left to right\n * to each element and current accumulator value that starts with [initial] value.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n * @param [operation] function that takes current accumulator value and an element, and calculates the next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scan\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R> UIntArray.scan(initial: R, operation: (acc: R, UInt) -> R): List<R> {\n    if (isEmpty())\n        return listOf(initial)\n    val result = ArrayList<R>(size + 1).apply { add(initial) }\n    var accumulator = initial\n    for (element in this) {\n        accumulator = operation(accumulator, element)\n        result.add(accumulator)\n    }\n    return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying [operation] from left to right\n * to each element and current accumulator value that starts with [initial] value.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n * @param [operation] function that takes current accumulator value and an element, and calculates the next accumulator value.\n * \n * @sample
```

samples.collections.Collections.Aggregates.scan\n

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R> ULongArray.scan(initial: R, operation: (acc: R, ULong) -> R): List<R> {\n    if (isEmpty())\n        return listOf(initial)\n    val result = ArrayList<R>(size + 1).apply { add(initial) }\n    var accumulator = initial\n    for (element in this) {\n        accumulator = operation(accumulator, element)\n        result.add(accumulator)\n    }\n    return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying [operation] from left to right\n * to each element and current accumulator value that starts with [initial] value.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n * @param [operation] function that takes current accumulator value and an element, and calculates the next accumulator value.\n * \n * @sample
```

samples.collections.Collections.Aggregates.scan\n

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R> UByteArray.scan(initial: R, operation: (acc: R, UByte) -> R): List<R> {\n    if (isEmpty())\n        return listOf(initial)\n    val result = ArrayList<R>(size + 1).apply { add(initial) }\n    var accumulator = initial\n    for (element in this) {\n        accumulator = operation(accumulator, element)\n        result.add(accumulator)\n    }\n    return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying [operation] from left to right\n * to each element and current accumulator value that starts with [initial] value.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n * @param [operation] function that takes current accumulator value and an element, and calculates the next accumulator value.\n * \n * @sample
```

samples.collections.Collections.Aggregates.scan\n

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R> UShortArray.scan(initial: R, operation: (acc: R, UShort) -> R): List<R> {\n    if (isEmpty())\n        return listOf(initial)\n    val result = ArrayList<R>(size + 1).apply { add(initial) }\n    var accumulator = initial\n    for (element in this) {\n        accumulator = operation(accumulator, element)\n        result.add(accumulator)\n    }\n    return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying [operation] from left to right\n * to each element, its index in the original array and
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current accumulator value that starts with [initial] value.\n \* \n \* Note that `acc` value passed to [operation] function should not be mutated;\n \* otherwise it would affect the previous value in resulting list.\n \* \n \* @param [operation] function that takes the index of an element, current accumulator value\n \* and the element itself, and calculates the next accumulator value.\n \* \n \* @sample samples.collections.Collections.Aggregates.scan\n

```

*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R> UIntArray.scanIndexed(initial: R, operation: (index: Int, acc: R, UInt) -> R): List<R> {\n    if (isEmpty()) return listOf(initial)\n    val result = ArrayList<R>(size + 1).apply { add(initial) }\n    var accumulator = initial\n    for (index in indices) {\n        accumulator = operation(index, accumulator, this[index])\n        result.add(accumulator)\n    }\n    return result\n}\n
```

\n \* Returns a list containing successive accumulation values generated by applying [operation] from left to right\n \* to each element, its index in the original array and current accumulator value that starts with [initial] value.\n \* \n \* Note that `acc` value passed to [operation] function should not be mutated;\n \* otherwise it would affect the previous value in resulting list.\n \* \n \* @param [operation] function that takes the index of an element, current accumulator value\n \* and the element itself, and calculates the next accumulator value.\n \* \n \* @sample samples.collections.Collections.Aggregates.scan\n

```

*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R> ULongArray.scanIndexed(initial: R, operation: (index: Int, acc: R, ULong) -> R): List<R> {\n    if (isEmpty()) return listOf(initial)\n    val result = ArrayList<R>(size + 1).apply { add(initial) }\n    var accumulator = initial\n    for (index in indices) {\n        accumulator = operation(index, accumulator, this[index])\n        result.add(accumulator)\n    }\n    return result\n}\n
```

\n \* Returns a list containing successive accumulation values generated by applying [operation] from left to right\n \* to each element, its index in the original array and current accumulator value that starts with [initial] value.\n \* \n \* Note that `acc` value passed to [operation] function should not be mutated;\n \* otherwise it would affect the previous value in resulting list.\n \* \n \* @param [operation] function that takes the index of an element, current accumulator value\n \* and the element itself, and calculates the next accumulator value.\n \* \n \* @sample samples.collections.Collections.Aggregates.scan\n

```

*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R> UByteArray.scanIndexed(initial: R, operation: (index: Int, acc: R, UByte) -> R): List<R> {\n    if (isEmpty()) return listOf(initial)\n    val result = ArrayList<R>(size + 1).apply { add(initial) }\n    var accumulator = initial\n    for (index in indices) {\n        accumulator = operation(index, accumulator, this[index])\n        result.add(accumulator)\n    }\n    return result\n}\n
```

\n \* Returns a list containing successive accumulation values generated by applying [operation] from left to right\n \* to each element, its index in the original array and current accumulator value that starts with [initial] value.\n \* \n \* Note that `acc` value passed to [operation] function should not be mutated;\n \* otherwise it would affect the previous value in resulting list.\n \* \n \* @param [operation] function that takes the index of an element, current accumulator value\n \* and the element itself, and calculates the next accumulator value.\n \* \n \* @sample samples.collections.Collections.Aggregates.scan\n

```

*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R> UShortArray.scanIndexed(initial: R, operation: (index: Int, acc: R, UShort) -> R): List<R> {\n    if (isEmpty()) return listOf(initial)\n    val result = ArrayList<R>(size + 1).apply { add(initial) }\n    var accumulator = initial\n    for (index in indices) {\n        accumulator = operation(index, accumulator, this[index])\n        result.add(accumulator)\n    }\n    return result\n}\n
```

\n \* Returns a list containing successive accumulation values generated by applying [operation] from left to right\n \* to each element and current accumulator value that starts with the first element of this array.\n \* \n \* Note that `acc` value passed to [operation] function should not be mutated;\n \* otherwise it would affect the previous value in resulting list.\n \* \n \* @param [operation] function that takes current accumulator value and an element, and calculates the next accumulator value.\n \* \n \* @sample samples.collections.Collections.Aggregates.scanReduce\n

```

*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UIntArray.scanReduce(operation: (acc: UInt, UInt) -> UInt): List<UInt> {\n    if (isEmpty()) return emptyList()\n    var accumulator = this[0]\n    val result = ArrayList<UInt>(size).apply { add(accumulator) }\n    for (index in 1 until size) {\n        accumulator = operation(accumulator, this[index])\n    }\n
```

result.add(accumulator)\n } \n return result\n}\n\n/\*\*\n \* Returns a list containing successive accumulation values generated by applying [operation] from left to right\n \* to each element and current accumulator value that starts with the first element of this array.\n \* \n \* Note that `acc` value passed to [operation] function should not be mutated;\n \* otherwise it would affect the previous value in resulting list.\n \* \n \* @param [operation] function that takes current accumulator value and an element, and calculates the next accumulator value.\n \* \n \* @sample samples.collections.Collections.Aggregates.scanReduce\n

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun ULongArray.scanReduce(operation: (acc: ULong, ULong) -> ULong): List<ULong> {\n if (isEmpty()) return emptyList()\n var accumulator = this[0]\n val result = ArrayList<ULong>(size).apply { add(accumulator) }\n for (index in 1 until size) {\n accumulator = operation(accumulator, this[index])\n result.add(accumulator)\n }\n return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying [operation] from left to right\n * to each element and current accumulator value that starts with the first element of this array.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n * @param [operation] function that takes current accumulator value and an element, and calculates the next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scanReduce\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UByteArray.scanReduce(operation: (acc: UByte, UByte) -> UByte): List<UByte> {\n if (isEmpty()) return emptyList()\n var accumulator = this[0]\n val result = ArrayList<UByte>(size).apply { add(accumulator) }\n for (index in 1 until size) {\n accumulator = operation(accumulator, this[index])\n result.add(accumulator)\n }\n return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying [operation] from left to right\n * to each element and current accumulator value that starts with the first element of this array.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n * @param [operation] function that takes current accumulator value and an element, and calculates the next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scanReduce\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UShortArray.scanReduce(operation: (acc: UShort, UShort) -> UShort): List<UShort> {\n if (isEmpty()) return emptyList()\n var accumulator = this[0]\n val result = ArrayList<UShort>(size).apply { add(accumulator) }\n for (index in 1 until size) {\n accumulator = operation(accumulator, this[index])\n result.add(accumulator)\n }\n return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying [operation] from left to right\n * to each element, its index in the original array and current accumulator value that starts with the first element of this array.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n * @param [operation] function that takes the index of an element, current accumulator value\n * and the element itself, and calculates the next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scanReduce\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UIntArray.scanReduceIndexed(operation: (index: Int, acc: UInt, UInt) -> UInt): List<UInt> {\n if (isEmpty()) return emptyList()\n var accumulator = this[0]\n val result = ArrayList<UInt>(size).apply { add(accumulator) }\n for (index in 1 until size) {\n accumulator = operation(index, accumulator, this[index])\n result.add(accumulator)\n }\n return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying [operation] from left to right\n * to each element, its index in the original array and current accumulator value that starts with the first element of this array.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n * @param [operation] function that takes the index of an element, current accumulator value\n * and the element itself, and calculates the next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scanReduce\n
```

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*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun ULongArray.scanReduceIndexed(operation: (index: Int, acc: ULong, ULong) -> ULong): List<ULong> {\n    if (isEmpty()) return emptyList()\n    var accumulator = this[0]\n    val result = ArrayList<ULong>(size).apply { add(accumulator) }\n    for (index in 1 until size) {\n        accumulator = operation(index, accumulator, this[index])\n        result.add(accumulator)\n    }\n    return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying [operation] from left to right\n * to each element, its index in the original array and current accumulator value that starts with the first element of this array.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n * @param [operation] function that takes the index of an element, current accumulator value\n * and the element itself, and calculates the next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scanReduce\n */
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UByteArray.scanReduceIndexed(operation: (index: Int, acc: UByte, UByte) -> UByte): List<UByte> {\n    if (isEmpty()) return emptyList()\n    var accumulator = this[0]\n    val result = ArrayList<UByte>(size).apply { add(accumulator) }\n    for (index in 1 until size) {\n        accumulator = operation(index, accumulator, this[index])\n        result.add(accumulator)\n    }\n    return result\n}\n\n/**\n * Returns a list containing successive accumulation values generated by applying [operation] from left to right\n * to each element, its index in the original array and current accumulator value that starts with the first element of this array.\n * \n * Note that `acc` value passed to [operation] function should not be mutated;\n * otherwise it would affect the previous value in resulting list.\n * \n * @param [operation] function that takes the index of an element, current accumulator value\n * and the element itself, and calculates the next accumulator value.\n * \n * @sample samples.collections.Collections.Aggregates.scanReduce\n */
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UShortArray.scanReduceIndexed(operation: (index: Int, acc: UShort, UShort) -> UShort): List<UShort> {\n    if (isEmpty()) return emptyList()\n    var accumulator = this[0]\n    val result = ArrayList<UShort>(size).apply { add(accumulator) }\n    for (index in 1 until size) {\n        accumulator = operation(index, accumulator, this[index])\n        result.add(accumulator)\n    }\n    return result\n}\n\n/**\n * Returns the sum of all values produced by [selector] function applied to each element in the array.\n */
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UIntArray.sumBy(selector: (UInt) -> UInt): UInt {\n    var sum: UInt = 0u\n    for (element in this) {\n        sum += selector(element)\n    }\n    return sum\n}\n\n/**\n * Returns the sum of all values produced by [selector] function applied to each element in the array.\n */
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun ULongArray.sumBy(selector: (ULong) -> UInt): UInt {\n    var sum: UInt = 0u\n    for (element in this) {\n        sum += selector(element)\n    }\n    return sum\n}\n\n/**\n * Returns the sum of all values produced by [selector] function applied to each element in the array.\n */
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UByteArray.sumBy(selector: (UByte) -> UInt): UInt {\n    var sum: UInt = 0u\n    for (element in this) {\n        sum += selector(element)\n    }\n    return sum\n}\n\n/**\n * Returns the sum of all values produced by [selector] function applied to each element in the array.\n */
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UShortArray.sumBy(selector: (UShort) -> UInt): UInt {\n    var sum: UInt = 0u\n    for (element in this) {\n        sum += selector(element)\n    }\n    return sum\n}\n\n/**\n * Returns the sum of all values produced by [selector] function applied to each element in the array.\n */
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UIntArray.sumByDouble(selector: (UInt) -> Double): Double {\n    var sum: Double = 0.0\n    for (element in this) {\n        sum += selector(element)\n    }\n    return sum\n}\n\n/**\n * Returns the sum of all values produced by [selector] function applied to each element in the array.\n */

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*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.sumByDouble(selector: (ULong) -> Double): Double {\n    var sum: Double = 0.0\n    for (element in
this) {\n        sum += selector(element)\n    }\n    return sum\n}\n\n/**\n * Returns the sum of all values produced by
[selector] function applied to each element in the array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.sumByDouble(selector: (UByte) -> Double): Double {\n    var sum: Double = 0.0\n    for (element in
this) {\n        sum += selector(element)\n    }\n    return sum\n}\n\n/**\n * Returns the sum of all values produced by
[selector] function applied to each element in the array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.sumByDouble(selector: (UShort) -> Double): Double {\n    var sum: Double = 0.0\n    for (element in
this) {\n        sum += selector(element)\n    }\n    return sum\n}\n\n/**\n * Returns a list of pairs built from the
elements of `this` array and the [other] array with the same index.\n * The returned list has length of the shortest
collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterable\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun <R> UIntArray.zip(other: Array<out
R>): List<Pair<UInt, R>> {\n    return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs built from
the elements of `this` array and the [other] array with the same index.\n * The returned list has length of the shortest
collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterable\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun <R> ULongArray.zip(other:
Array<out R>): List<Pair<ULong, R>> {\n    return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of
pairs built from the elements of `this` array and the [other] array with the same index.\n * The returned list has
length of the shortest collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterable\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun <R> UByteArray.zip(other: Array<out
R>): List<Pair<UByte, R>> {\n    return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs built
from the elements of `this` array and the [other] array with the same index.\n * The returned list has length of the
shortest collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterable\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun <R> UShortArray.zip(other:
Array<out R>): List<Pair<UShort, R>> {\n    return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of
values built from the elements of `this` array and the [other] array with the same index\n * using the provided
[transform] function applied to each pair of elements.\n * The returned list has length of the shortest collection.\n *
\n * @sample samples.collections.Iterables.Operations.zipIterableWithTransform\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, V>
UIntArray.zip(other: Array<out R>, transform: (a: UInt, b: R) -> V): List<V> {\n    val size = minOf(size,
other.size)\n    val list = ArrayList<V>(size)\n    for (i in 0 until size) {\n        list.add(transform(this[i],
other[i]))\n    }\n    return list\n}\n\n/**\n * Returns a list of values built from the elements of `this` array and the
[other] array with the same index\n * using the provided [transform] function applied to each pair of elements.\n * The
returned list has length of the shortest collection.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterableWithTransform\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, V>
ULongArray.zip(other: Array<out R>, transform: (a: ULong, b: R) -> V): List<V> {\n    val size = minOf(size,
other.size)\n    val list = ArrayList<V>(size)\n    for (i in 0 until size) {\n        list.add(transform(this[i],
other[i]))\n    }\n    return list\n}\n\n/**\n * Returns a list of values built from the elements of `this` array and the
[other] array with the same index\n * using the provided [transform] function applied to each pair of elements.\n * The
returned list has length of the shortest collection.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterableWithTransform\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, V>
UByteArray.zip(other: Array<out R>, transform: (a: UByte, b: R) -> V): List<V> {\n    val size = minOf(size,
other.size)\n    val list = ArrayList<V>(size)\n    for (i in 0 until size) {\n        list.add(transform(this[i],
other[i]))\n    }\n    return list\n}\n\n/**\n * Returns a list of values built from the elements of `this` array and the
[other] array

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with the same index\n * using the provided [transform] function applied to each pair of elements.\n * The returned
list has length of the shortest collection.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterableWithTransform\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, V>
UShortArray.zip(other: Array<out R>, transform: (a: UShort, b: R) -> V): List<V> {\n    val size = minOf(size,
other.size)\n    val list = ArrayList<V>(size)\n    for (i in 0 until size) {\n        list.add(transform(this[i], other[i]))\n    }\n    return list\n}\n\n/**\n * Returns a list of pairs built from the elements of `this` collection and [other] array with
the same index.\n * The returned list has length of the shortest collection.\n * \n * @sample
samples.collections.Iterables.Operations.zipIterable\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun <R> UIntArray.zip(other:
Iterable<R>): List<Pair<UInt, R>> {\n    return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs
built from the elements of `this` collection and [other] array with the same index.\n * The returned list has length of
the shortest collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterable\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun <R> ULongArray.zip(other:
Iterable<R>): List<Pair<ULong, R>> {\n    return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs
built from the elements of `this` collection and [other] array with the same index.\n * The returned list has length of
the shortest collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterable\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun <R> UByteArray.zip(other:
Iterable<R>): List<Pair<UByte, R>> {\n    return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of pairs
built from the elements of `this` collection and [other] array with the same index.\n * The returned list has length of
the shortest collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterable\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun <R> UShortArray.zip(other:
Iterable<R>): List<Pair<UShort, R>> {\n    return zip(other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n * Returns a list of
values built from the elements of `this` array and the [other] collection with the same index\n * using the provided
[transform] function applied to each pair of elements.\n * The returned list has length of the shortest collection.\n *
\n * @sample samples.collections.Iterables.Operations.zipIterableWithTransform\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, V>
UIntArray.zip(other: Iterable<R>, transform: (a: UInt, b: R) -> V): List<V> {\n    val arraySize = size\n    val list =
ArrayList<V>(minOf(other.collectionSizeOrDefault(10), arraySize))\n    var i = 0\n    for (element in other) {\n
if (i >= arraySize) break\n        list.add(transform(this[i++], element))\n    }\n    return list\n}\n\n/**\n * Returns a
list of values built from the elements of `this` array and the [other] collection with the same index\n * using the
provided [transform] function applied to each pair of elements.\n * The returned list has length of the shortest
collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterableWithTransform\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, V>
ULongArray.zip(other: Iterable<R>, transform: (a: ULong, b: R) -> V): List<V> {\n    val arraySize = size\n    val
list = ArrayList<V>(minOf(other.collectionSizeOrDefault(10), arraySize))\n    var i = 0\n    for (element in other)
{\n        if (i >= arraySize) break\n        list.add(transform(this[i++], element))\n    }\n    return list\n}\n\n/**\n *
Returns a list of values built from the elements of `this` array and the [other] collection with the same index\n *
using the provided [transform] function applied to each pair of elements.\n * The returned list has length of the
shortest collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterableWithTransform\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, V>
UByteArray.zip(other: Iterable<R>, transform: (a: UByte, b: R) -> V): List<V> {\n    val arraySize = size\n    val
list = ArrayList<V>(minOf(other.collectionSizeOrDefault(10), arraySize))\n    var i = 0\n    for (element in other)
{\n        if (i >= arraySize) break\n        list.add(transform(this[i++], element))\n    }\n    return list\n}\n\n/**\n *
Returns a list of values built from the elements of `this` array and the [other] collection with the same index\n *
using the provided [transform] function applied to each pair of elements.\n * The returned list has length of the
shortest collection.\n * \n * @sample samples.collections.Iterables.Operations.zipIterableWithTransform\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R, V>

```

```

UShortArray.zip(other: Iterable<R>, transform: (a: UShort, b: R) -> V): List<V> {
    val arraySize = size
    val list = ArrayList<V>(minOf(other.collectionSizeOrDefault(10), arraySize))
    var i = 0
    for (element in other) {
        if (i >= arraySize) break
        list.add(transform(this[i++], element))
    }
    return list
}

Returns a list of pairs built from the elements of `this` array and the [other] array with the same index.
The returned list has length of the shortest collection.

@sample
samples.collections.Iterables.Operations.zipIterable

*\/n@SinceKotlin("1.3")n@ExperimentalUnsignedTypesnpublic infix fun UIntArray.zip(other: UIntArray):
List<Pair<UInt, UInt>> {
    return zip(other) { t1, t2 -> t1 to t2 }
}

Returns a list of pairs built from the elements of `this` array and the [other] array with the same index.
The returned list has length of the shortest collection.

@sample
samples.collections.Iterables.Operations.zipIterable

*\/n@SinceKotlin("1.3")n@ExperimentalUnsignedTypesnpublic infix fun ULongArray.zip(other: ULongArray):
List<Pair<ULong, ULong>> {
    return zip(other) { t1, t2 -> t1 to t2 }
}

Returns a list of pairs built from the elements of `this` array and the [other] array with the same index.
The returned list has length of the shortest collection.

@sample
samples.collections.Iterables.Operations.zipIterable

*\/n@SinceKotlin("1.3")n@ExperimentalUnsignedTypesnpublic infix fun UByteArray.zip(other: UByteArray):
List<Pair<UByte, UByte>> {
    return zip(other) { t1, t2 -> t1 to t2 }
}

Returns a list of pairs built from the elements of `this` array and the [other] array with the same index.
The returned list has length of the shortest collection.

@sample
samples.collections.Iterables.Operations.zipIterable

*\/n@SinceKotlin("1.3")n@ExperimentalUnsignedTypesnpublic infix fun UShortArray.zip(other: UShortArray):
List<Pair<UShort, UShort>> {
    return zip(other) { t1, t2 -> t1 to t2 }
}

Returns a list of values built from the elements of `this` array and the [other] array with the same index
using the provided [transform] function applied to each pair of elements.
The returned list has length of the shortest array.

@sample
samples.collections.Iterables.Operations.zipIterableWithTransform

*\/n@SinceKotlin("1.3")n@ExperimentalUnsignedTypesn@kotlin.internal.InlineOnlynpublic inline fun <V>
UIntArray.zip(other: UIntArray, transform: (a: UInt, b: UInt) -> V): List<V> {
    val size = minOf(size, other.size)
    val list = ArrayList<V>(size)
    for (i in 0 until size) {
        list.add(transform(this[i], other[i]))
    }
    return list
}

Returns a list of values built from the elements of `this` array and the [other] array with the same index
using the provided [transform] function applied to each pair of elements.
The returned list has length of the shortest array.

@sample
samples.collections.Iterables.Operations.zipIterableWithTransform

*\/n@SinceKotlin("1.3")n@ExperimentalUnsignedTypesn@kotlin.internal.InlineOnlynpublic inline fun <V>
ULongArray.zip(other: ULongArray, transform: (a: ULong, b: ULong) -> V): List<V> {
    val size = minOf(size, other.size)
    val list = ArrayList<V>(size)
    for (i in 0 until size) {
        list.add(transform(this[i], other[i]))
    }
    return list
}

Returns a list of values built from the elements of `this` array and the [other] array with the same index
using the provided [transform] function applied to each pair of elements.
The returned list has length of the shortest array.

@sample
samples.collections.Iterables.Operations.zipIterableWithTransform

*\/n@SinceKotlin("1.3")n@ExperimentalUnsignedTypesn@kotlin.internal.InlineOnlynpublic inline fun <V>
UByteArray.zip(other: UByteArray, transform: (a: UByte, b: UByte) -> V): List<V> {
    val size = minOf(size, other.size)
    val list = ArrayList<V>(size)
    for (i in 0 until size) {
        list.add(transform(this[i], other[i]))
    }
    return list
}

Returns a list of values built from the elements of `this` array and the [other] array with the same index
using the provided [transform] function applied to each pair of elements.
The returned list has length of the shortest array.

@sample
samples.collections.Iterables.Operations.zipIterableWithTransform

*\/n@SinceKotlin("1.3")n@ExperimentalUnsignedTypesn@kotlin.internal.InlineOnlynpublic inline fun <V>
UShortArray.zip(other: UShortArray, transform: (a: UShort, b: UShort) -> V): List<V> {
    val size = minOf(size, other.size)
    val list = ArrayList<V>(size)
    for (i in 0 until size) {
        list.add(transform(this[i], other[i]))
    }
    return list
}

Returns the sum of all elements in the array.

```



```

*\n@kotlin.jvm.JvmName("sumOfUInt")\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
Array<out UInt>.sum(): UInt {\n  var sum: UInt = 0u\n  for (element in this) {\n    sum += element\n  }\n  return sum\n}\n\n/**\n * Returns the sum of all elements in the array.\n
*\n@kotlin.jvm.JvmName("sumOfULong")\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
Array<out ULong>.sum(): ULong {\n  var sum: ULong = 0uL\n  for (element in this) {\n    sum += element\n  }\n  return sum\n}\n\n/**\n * Returns the sum of all elements in the array.\n
*\n@kotlin.jvm.JvmName("sumOfUByte")\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
Array<out UByte>.sum(): UInt {\n  var sum: UInt = 0u\n  for (element in this) {\n    sum += element\n  }\n  return sum\n}\n\n/**\n * Returns the sum of all elements in the array.\n
*\n@kotlin.jvm.JvmName("sumOfUShort")\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
Array<out UShort>.sum(): UInt {\n  var sum: UInt = 0u\n  for (element in this) {\n    sum += element\n  }\n  return sum\n}\n\n/**\n * Returns the sum of all elements in the array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.sum(): UInt {\n  return storage.sum().toUInt()\n}\n\n/**\n * Returns the sum of all elements in the
array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.sum(): ULong {\n  return storage.sum().toULong()\n}\n\n/**\n * Returns the sum of all elements in
the array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline
fun UByteArray.sum(): UInt {\n  return sumBy { it.toUInt() }\n}\n\n/**\n * Returns the sum of all elements in the
array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.sum(): UInt {\n  return sumBy { it.toUInt() }\n}\n\n"/**\n * Copyright 2010-2019 JetBrains s.r.o.
and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license
that can be found in the license/LICENSE.txt file.\n
*\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("UCollectionsKt")\n\npackage
kotlin.collections\n\n/\n// NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt\n// See:
https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib\n\n\nimport kotlin.random.*\nimport
kotlin.ranges.contains\nimport kotlin.ranges.reversed\n\n/**\n * Returns an array of UByte containing all of the
elements of this collection.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
Collection<UByte>.toUByteArray(): UByteArray {\n  val result = UByteArray(size)\n  var index = 0\n  for
(element in this)\n    result[index++] = element\n  return result\n}\n\n/**\n * Returns an array of UInt containing
all of the elements of this collection.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
Collection<UInt>.toUIntArray(): UIntArray {\n  val result = UIntArray(size)\n  var index = 0\n  for (element in
this)\n    result[index++] = element\n  return result\n}\n\n/**\n * Returns an array of ULong containing all of the
elements of this collection.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
Collection<ULong>.toULongArray(): ULongArray {\n  val result = ULongArray(size)\n  var index = 0\n  for
(element in this)\n    result[index++] = element\n  return result\n}\n\n/**\n * Returns an array of UShort
containing all of the elements of this collection.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun Collection<UShort>.toUShortArray():
UShortArray {\n  val result = UShortArray(size)\n  var index = 0\n  for (element in this)\n    result[index++] =
element\n  return result\n}\n\n/**\n * Returns the sum of all elements in the collection.\n
*\n@kotlin.jvm.JvmName("sumOfUInt")\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
Iterable<UInt>.sum(): UInt {\n  var sum: UInt = 0u\n  for (element in this) {\n    sum += element\n  }\n  return
sum\n}\n\n/**\n * Returns the sum of all elements in the collection.\n
*\n@kotlin.jvm.JvmName("sumOfULong")\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
Iterable<ULong>.sum(): ULong {\n  var sum: ULong = 0uL\n  for (element in this) {\n    sum += element\n  }\n  return
sum\n}\n\n/**\n * Returns the sum of all elements in the collection.\n
*\n@kotlin.jvm.JvmName("sumOfUByte")\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
Iterable<UByte>.sum(): UInt {\n  var sum: UInt = 0u\n  for (element in this) {\n    sum += element\n  }\n  return
sum\n}\n\n/**\n * Returns the sum of all elements in the collection.\n

```

```
*/\n@kotlin.jvm.JvmName("\sumOfUShort")\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun  
Iterable<UShort>.sum(): UInt {\n    var sum: UInt = 0u\n    for (element in this) {\n        sum += element\n    }\n    return sum\n}\n\n", /*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("UComparisonsKt")\n\npackage  
kotlin.comparisons\n\n/\n// NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt\n// See:  
https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib\n/\n\nimport kotlin.random.*\n\n/**\n * Returns the  
greater of two values.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun maxOf(a: UInt, b:  
UInt): UInt {\n    return if (a >= b) a else b\n}\n\n/**\n * Returns the greater of two values.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun maxOf(a: ULong, b: ULong): ULong {\n    return if (a >= b) a else b\n}\n\n/**\n * Returns the greater of two values.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun maxOf(a: UByte, b: UByte): UByte {\n    return if (a >= b) a else b\n}\n\n/**\n * Returns the greater of two values.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun maxOf(a: UShort, b: UShort): UShort {\n    return if (a >= b) a else b\n}\n\n/**\n * Returns the greater of three values.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun  
maxOf(a: UInt, b: UInt, c: UInt): UInt {\n    return maxOf(a, maxOf(b, c))\n}\n\n/**\n * Returns the greater of three  
values.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline  
fun maxOf(a: ULong, b: ULong, c: ULong): ULong {\n    return maxOf(a, maxOf(b, c))\n}\n\n/**\n * Returns the  
greater of three values.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun  
maxOf(a: UByte, b: UByte, c: UByte): UByte {\n    return maxOf(a, maxOf(b, c))\n}\n\n/**\n * Returns the greater  
of three values.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic  
inline fun maxOf(a: UShort, b: UShort, c: UShort): UShort {\n    return maxOf(a, maxOf(b, c))\n}\n\n/**\n * Returns the smaller of two values.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun  
minOf(a: UInt, b: UInt): UInt {\n    return if (a <= b) a else b\n}\n\n/**\n * Returns the smaller of two values.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun minOf(a: ULong, b: ULong): ULong {\n    return if (a <= b) a else b\n}\n\n/**\n * Returns the smaller of two values.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun minOf(a: UByte, b: UByte): UByte {\n    return if (a <= b) a else b\n}\n\n/**\n * Returns the smaller of two values.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun minOf(a: UShort, b: UShort): UShort {\n    return if (a <= b) a else b\n}\n\n/**\n * Returns the smaller of three values.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun  
minOf(a: UInt, b: UInt, c: UInt): UInt {\n    return minOf(a, minOf(b, c))\n}\n\n/**\n * Returns the smaller of three  
values.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline  
fun minOf(a: ULong, b: ULong, c: ULong): ULong {\n    return minOf(a, minOf(b, c))\n}\n\n/**\n * Returns the  
smaller of three values.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun  
minOf(a: UByte, b: UByte, c: UByte): UByte {\n    return minOf(a, minOf(b, c))\n}\n\n/**\n * Returns the smaller  
of three values.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic  
inline fun minOf(a: UShort, b: UShort, c: UShort): UShort {\n    return minOf(a, minOf(b, c))\n}\n\n", /*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is  
governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("URangesKt")\n\npackage  
kotlin.ranges\n\n/\n// NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt\n// See:  
https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib\n/\n\nimport kotlin.random.*\n\n/**\n * Returns a  
random element from this range.\n */\n@throws IllegalArgumentException if this range is empty.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
```

```

UIntRange.random(): UInt {n return random(Random)\n}\n\n/**\n * Returns a random element from this range.\n * \n * @throws IllegalArgumentException if this range is empty.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongRange.random(): ULong {n return random(Random)\n}\n\n/**\n * Returns a random element from this
range using the specified source of randomness.\n * \n * @throws IllegalArgumentException if this range is
empty.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntRange.random(random:
Random): UInt {n try {\n return random.nextUInt(this)\n } catch(e: IllegalArgumentException) {\n
throw NoSuchElementException(e.message)\n }\n}\n\n/**\n * Returns a random element from this range using
the specified source of randomness.\n * \n * @throws IllegalArgumentException if this range is empty.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongRange.random(random: Random):
ULong {n try {\n return random.nextULong(this)\n } catch(e: IllegalArgumentException) {\n throw
NoSuchElementException(e.message)\n }\n}\n\n/**\n * Returns a random element from this range, or `null` if this
range is empty.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\npublic inline fun UIntRange.randomOrNull(): UInt? {n return randomOrNull(Random)\n}\n\n/**\n * Returns
a random element from this range, or `null` if this range is empty.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\npublic inline fun ULongRange.randomOrNull(): ULong? {n return randomOrNull(Random)\n}\n\n/**\n *
Returns a random element from this range using the specified source of randomness, or `null` if this range is
empty.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\npublic fun
UIntRange.randomOrNull(random: Random): UInt? {n if (isEmpty())\n return null\n return
random.nextUInt(this)\n}\n\n/**\n * Returns a random element from this range using the specified source of
randomness, or `null` if this range is empty.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\npublic fun
ULongRange.randomOrNull(random: Random): ULong? {n if (isEmpty())\n return null\n return
random.nextULong(this)\n}\n\n/**\n * Returns `true` if this range contains the specified [element].\n * \n * Always
returns `false` if the [element] is `null`.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\npublic fun
ULongRange.randomOrNull(random: Random): ULong? {n if (isEmpty())\n return null\n return
random.nextULong(this)\n}\n\n/**\n * Returns `true` if this range contains the specified [element].\n * \n * Always
returns `false` if the [element] is `null`.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline operator fun
UIntRange.contains(element: UInt?): Boolean {n return element != null && contains(element)\n}\n\n/**\n *
Returns `true` if this range contains the specified [element].\n * \n * Always returns `false` if the [element] is
`null`.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline
operator fun ULongRange.contains(element: ULong?): Boolean {n return element != null &&
contains(element)\n}\n\n/**\n * Checks if the specified [value] belongs to this range.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic operator fun UIntRange.contains(value:
UByte): Boolean {n return contains(value.toUInt())\n}\n\n/**\n * Checks if the specified [value] belongs to this
range.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic operator fun
ULongRange.contains(value: UByte): Boolean {n return contains(value.toULong())\n}\n\n/**\n * Checks if the
specified [value] belongs to this range.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic
operator fun ULongRange.contains(value: UInt): Boolean {n return contains(value.toULong())\n}\n\n/**\n *
Checks if the specified [value] belongs to this range.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic operator fun UIntRange.contains(value:
ULong): Boolean {n return (value shr UInt.SIZE_BITS) == 0uL && contains(value.toUInt())\n}\n\n/**\n *
Checks if the specified [value] belongs to this range.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic operator fun UIntRange.contains(value:
UShort): Boolean {n return contains(value.toUInt())\n}\n\n/**\n * Checks if the specified [value] belongs to this
range.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic operator fun
ULongRange.contains(value: UShort): Boolean {n return contains(value.toULong())\n}\n\n/**\n * Returns a
progression from this value down to the specified [to] value with the step -1.\n * \n * The [to] value should be less

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than or equal to `this` value.\n \* If the [to] value is greater than `this` value the returned progression is empty.\n

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*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun UByte.downTo(to: UByte):
UIntProgression {\n    return UIntProgression.fromClosedRange(this.toUInt(), to.toUInt(), -1)\n}\n\n/**\n * Returns
a progression from this value down to the specified [to] value with the step -1.\n * \n * The [to] value should be less
than or equal to `this` value.\n * If the [to] value is greater than `this` value the returned progression is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun UInt.downTo(to: UInt):
UIntProgression {\n    return UIntProgression.fromClosedRange(this, to, -1)\n}\n\n/**\n * Returns a progression
from this value down to the specified [to] value with the step -1.\n * \n * The [to] value should be less than or equal
to `this` value.\n * If the [to] value is greater than `this` value the returned progression is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun ULong.downTo(to: ULong):
ULongProgression {\n    return ULongProgression.fromClosedRange(this, to, -1L)\n}\n\n/**\n * Returns a
progression from this value down to the specified [to] value with the step -1.\n * \n * The [to] value should be less
than or equal to `this` value.\n * If the [to] value is greater than `this` value the returned progression is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun UShort.downTo(to: UShort):
UIntProgression {\n    return UIntProgression.fromClosedRange(this.toUInt(), to.toUInt(), -1)\n}\n\n/**\n * Returns
a progression that goes over the same range in the opposite direction with the same step.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntProgression.reversed():
UIntProgression {\n    return UIntProgression.fromClosedRange(last, first, -step)\n}\n\n/**\n * Returns a
progression that goes over the same range in the opposite direction with the same step.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongProgression.reversed():
ULongProgression {\n    return ULongProgression.fromClosedRange(last, first, -step)\n}\n\n/**\n * Returns a
progression that goes over the same range with the given step.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun UIntProgression.step(step: Int):
UIntProgression {\n    checkStepIsPositive(step > 0, step)\n    return UIntProgression.fromClosedRange(first, last, if
(this.step > 0) step else -step)\n}\n\n/**\n * Returns a progression that goes over the same range with the given
step.\n *\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun ULongProgression.step(step:
Long): ULongProgression {\n    checkStepIsPositive(step > 0, step)\n    return
ULongProgression.fromClosedRange(first, last, if (this.step > 0) step else -step)\n}\n\n/**\n * Returns a range from
this value up to but excluding the specified [to] value.\n * \n * If the [to] value is less than or equal to `this` value,
then the returned range is empty.\n *\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun
UByte.until(to: UByte): UIntRange {\n    if (to <= UByte.MIN_VALUE) return UIntRange.EMPTY\n    return
this.toUInt() .. (to - 1u).toUInt()\n}\n\n/**\n * Returns a range from this value up to but excluding the specified [to]
value.\n * \n * If the [to] value is less than or equal to `this` value, then the returned range is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun UInt.until(to: UInt): UIntRange {\n
if (to <= UInt.MIN_VALUE) return UIntRange.EMPTY\n    return this .. (to - 1u).toUInt()\n}\n\n/**\n * Returns a
range from this value up to but excluding the specified [to] value.\n * \n * If the [to] value is less than or equal to
`this` value, then the returned range is empty.\n *\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic
infix fun ULong.until(to: ULong): ULongRange {\n    if (to <= ULong.MIN_VALUE) return
ULongRange.EMPTY\n    return this .. (to - 1u).toULong()\n}\n\n/**\n * Returns a range from this value up to but
excluding the specified [to] value.\n * \n * If the [to] value is less than or equal to `this` value, then the returned
range is empty.\n *\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun UShort.until(to:
UShort): UIntRange {\n    if (to <= UShort.MIN_VALUE) return UIntRange.EMPTY\n    return this.toUInt() .. (to -
1u).toUInt()\n}\n\n/**\n * Ensures that this value is not less than the specified [minimumValue].\n * \n * @return
this value if it's greater than or equal to the [minimumValue] or the [minimumValue] otherwise.\n * \n * @sample
samples.comparisons.ComparableOps.coerceAtLeastUnsigned\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UInt.coerceAtLeast(minimumValue: UInt):
UInt {\n    return if (this < minimumValue) minimumValue else this\n}\n\n/**\n * Ensures that this value is not less
than the specified [minimumValue].\n * \n * @return this value if it's greater than or equal to the [minimumValue]
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or the [minimumValue] otherwise.\n * \n * @sample
samples.comparisons.ComparableOps.coerceAtLeastUnsigned\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULong.coerceAtLeast(minimumValue:
ULong): ULong {\n    return if (this < minimumValue) minimumValue else this\n}\n\n/**\n * Ensures that this
value is not less than the specified [minimumValue].\n * \n * @return this value if it's greater than or equal to the
[minimumValue] or the [minimumValue] otherwise.\n * \n * @sample
samples.comparisons.ComparableOps.coerceAtLeastUnsigned\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByte.coerceAtLeast(minimumValue:
UByte): UByte {\n    return if (this < minimumValue) minimumValue else this\n}\n\n/**\n * Ensures that this value
is not less than the specified [minimumValue].\n * \n * @return this value if it's greater than or equal to the
[minimumValue] or the [minimumValue] otherwise.\n * \n * @sample
samples.comparisons.ComparableOps.coerceAtLeastUnsigned\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShort.coerceAtLeast(minimumValue:
UShort): UShort {\n    return if (this < minimumValue) minimumValue else this\n}\n\n/**\n * Ensures that this
value is not greater than the specified [maximumValue].\n * \n * @return this value if it's less than or equal to the
[maximumValue] or the [maximumValue] otherwise.\n * \n * @sample
samples.comparisons.ComparableOps.coerceAtMostUnsigned\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UInt.coerceAtMost(maximumValue: UInt):
UInt {\n    return if (this > maximumValue) maximumValue else this\n}\n\n/**\n * Ensures that this value is not
greater than the specified [maximumValue].\n * \n * @return this value if it's less than or equal to the
[maximumValue] or the [maximumValue] otherwise.\n * \n * @sample
samples.comparisons.ComparableOps.coerceAtMostUnsigned\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULong.coerceAtMost(maximumValue:
ULong): ULong {\n    return if (this > maximumValue) maximumValue else this\n}\n\n/**\n * Ensures that this
value is not greater than the specified [maximumValue].\n * \n * @return this value if it's less than or equal to the
[maximumValue] or the [maximumValue] otherwise.\n * \n * @sample
samples.comparisons.ComparableOps.coerceAtMostUnsigned\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByte.coerceAtMost(maximumValue:
UByte): UByte {\n    return if (this > maximumValue) maximumValue else this\n}\n\n/**\n * Ensures that this
value is not greater than the specified [maximumValue].\n * \n * @return this value if it's less than or equal to the
[maximumValue] or the [maximumValue] otherwise.\n * \n * @sample
samples.comparisons.ComparableOps.coerceAtMostUnsigned\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShort.coerceAtMost(maximumValue:
UShort): UShort {\n    return if (this > maximumValue) maximumValue else this\n}\n\n/**\n * Ensures that this
value lies in the specified range [minimumValue]..[maximumValue].\n * \n * @return this value if it's in the range,
or [minimumValue] if this value is less than [minimumValue], or [maximumValue] if this value is greater than
[maximumValue].\n * \n * @sample samples.comparisons.ComparableOps.coerceInUnsigned\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UInt.coerceIn(minimumValue: UInt,
maximumValue: UInt): UInt {\n    if (minimumValue > maximumValue) throw IllegalArgumentException("Cannot
coerce value to an empty range: maximum $maximumValue is less than minimum $minimumValue.")\n    if (this <
minimumValue) return minimumValue\n    if (this > maximumValue) return maximumValue\n    return
this\n}\n\n/**\n * Ensures that this value lies in the specified range [minimumValue]..[maximumValue].\n * \n *
@return this value if it's in the range, or [minimumValue] if this value is less than [minimumValue], or
[maximumValue] if this value is greater than [maximumValue].\n * \n * @sample
samples.comparisons.ComparableOps.coerceInUnsigned\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULong.coerceIn(minimumValue: ULong,
maximumValue: ULong): ULong {\n    if (minimumValue > maximumValue) throw
IllegalArgument\nException("Cannot coerce value to an empty range: maximum $maximumValue is less than

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minimum $minimumValue.)\n if (this < minimumValue) return minimumValue\n if (this > maximumValue)
return maximumValue\n return this\n}\n\n/**\n * Ensures that this value lies in the specified range
[minimumValue]..[maximumValue].\n * \n * @return this value if it's in the range, or [minimumValue] if this value
is less than [minimumValue], or [maximumValue] if this value is greater than [maximumValue].\n * \n * @sample
samples.comparisons.ComparableOps.coerceInUnsigned\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByte.coerceIn(minimumValue: UByte,
maximumValue: UByte): UByte {\n if (minimumValue > maximumValue) throw
IllegalArgumentOutOfRangeException("Cannot coerce value to an empty range: maximum $maximumValue is less than
minimum $minimumValue.")\n if (this < minimumValue) return minimumValue\n if (this > maximumValue)
return maximumValue\n return this\n}\n\n/**\n * Ensures that this value lies in the specified range
[minimumValue]..[maximumValue].\n * \n * @return this value if it's in the range, or [minimumValue] if this value
is less than [minimumValue], or [maximumValue] if this value is greater than [maximumValue].\n * \n * @sample
samples.comparisons.ComparableOps.coerceInUnsigned\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShort.coerceIn(minimumValue: UShort,
maximumValue: UShort): UShort {\n if (minimumValue > maximumValue) throw
IllegalArgumentOutOfRangeException("Cannot coerce value to an empty range: maximum $maximumValue is less than
minimum $minimumValue.")\n if (this < minimumValue) return minimumValue\n if (this > maximumValue)
return maximumValue\n return this\n}\n\n/**\n * Ensures that this value lies in the specified [range].\n * \n *
@return this value if it's in the [range], or `range.start` if this value is less than `range.start`, or `range.endInclusive`
if this value is greater than `range.endInclusive`.\n * \n * @sample
samples.comparisons.ComparableOps.coerceInUnsigned\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UInt.coerceIn(range: ClosedRange<UInt>):
UInt {\n if (range is ClosedFloatingPointRange) {\n return this.coerceIn<UInt>(range)\n }\n if
(range.isEmpty()) throw IllegalArgumentOutOfRangeException("Cannot coerce value to an empty range: $range.")\n return
when {\n this < range.start -> range.start\n this > range.endInclusive -> range.endInclusive\n else ->
this\n }\n}\n\n/**\n * Ensures that this value lies in the specified [range].\n * \n * @return this value if it's in the
[range], or `range.start` if this value is less than `range.start`, or `range.endInclusive` if this value is greater than
`range.endInclusive`.\n * \n * @sample samples.comparisons.ComparableOps.coerceInUnsigned\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULong.coerceIn(range:
ClosedRange<ULong>): ULong {\n if (range is ClosedFloatingPointRange) {\n return
this.coerceIn<ULong>(range)\n }\n if (range.isEmpty()) throw IllegalArgumentOutOfRangeException("Cannot coerce value
to an empty range: $range.")\n return when {\n this < range.start -> range.start\n this >
range.endInclusive -> range.endInclusive\n else -> this\n }\n}\n\n"/\n * Copyright 2010-2019 JetBrains
s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0
license that can be found in the license/LICENSE.txt file.\n
*\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("USequencesKt")\n\npackage
kotlin.sequences\n\n/\n// NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt\n// See:
https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib\n\nimport kotlin.random.*\n\n/**\n * Returns the
sum of all elements in the sequence.\n * \n * The operation is _terminal_.\n
*\n@kotlin.jvm.JvmName("sumOfUInt")\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
Sequence<UInt>.sum(): UInt {\n var sum: UInt = 0u\n for (element in this) {\n sum += element\n }\n
return sum\n}\n\n/**\n * Returns the sum of all elements in the sequence.\n * \n * The operation is _terminal_.\n
*\n@kotlin.jvm.JvmName("sumOfULong")\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
Sequence<ULong>.sum(): ULong {\n var sum: ULong = 0uL\n for (element in this) {\n sum += element\n
}\n return sum\n}\n\n/**\n * Returns the sum of all elements in the sequence.\n * \n * The operation is
_terminal_.\n
*\n@kotlin.jvm.JvmName("sumOfUByte")\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
Sequence<UByte>.sum(): UInt {\n var sum: UInt = 0u\n for (element in this) {\n sum += element\n }\n

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return sum\n}\n\n/**\n * Returns the sum of all elements in the sequence.\n *\n * The operation is _terminal_.\n *\n * \n@kotlin.jvm.JvmName("\sumOfUShort")\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
Sequence<UShort>.sum(): UInt { \n    var sum: UInt = 0u\n    for (element in this) { \n        sum += element\n    } \n
return sum\n}\n\n", "/*\n * Copyright 2010-2015 JetBrains s.r.o.\n *\n * Licensed under the Apache License,
Version 2.0 (the \"License\");\n * you may not use this file except in compliance with the License.\n * You may
obtain a copy of the License at\n *\n * http://www.apache.org/licenses/LICENSE-2.0\n *\n * Unless required by
applicable law or agreed to in writing, software\n * distributed under the License is distributed on an \"AS IS\"
BASIS,\n * WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.\n * See the
License for the specific language governing permissions and\n * limitations under the License.\n */\n\npackage
kotlin.collections\n\nimport kotlin.internal.PlatformDependent\n\n/**\n * Classes that inherit from this interface can
be represented as a sequence of elements that can\n * be iterated over.\n * @param T the type of element being
iterated over. The iterator is covariant on its element type.\n */\npublic interface Iterable<out T> { \n    /**\n     *
Returns an iterator over the elements of this object.\n     *\n     * \n public operator fun iterator(): Iterator<T>\n}\n\n/**\n *
Classes that inherit from this interface can be represented as a sequence of elements that can\n * be iterated over
and that supports removing elements during iteration.\n * @param T the type of element being iterated over. The
mutable iterator is invariant on its element type.\n */\npublic interface MutableIterable<out T> : Iterable<T> { \n
    /**\n     * Returns an iterator over the elements of this sequence that supports removing elements during iteration.\n
     *\n     * \n override fun iterator(): MutableIterator<T>\n}\n\n/**\n * A generic collection of elements. Methods in this
interface support only read-only access to the collection;\n * read/write access is supported through the
[MutableCollection] interface.\n * @param E the type of elements contained in the collection. The collection is
covariant on its element type.\n */\npublic interface Collection<out E> : Iterable<E> { \n    // Query Operations\n
    /**\n     * Returns the size of the collection.\n     *\n     * \n public val size: Int\n\n     /**\n     * Returns `true` if the
collection is empty (contains no elements), `false` otherwise.\n     *\n     * \n public fun isEmpty(): Boolean\n\n     /**\n
     * Checks if the specified element is contained in this collection.\n     *\n     * \n public operator fun contains(element:
@UnsafeVariance E): Boolean\n\n     override fun iterator(): Iterator<E>\n\n    // Bulk Operations\n\n     /**\n     *
Checks if all elements in the specified collection are contained in this collection.\n     *\n     * \n public fun
containsAll(elements: Collection<@UnsafeVariance E>): Boolean\n}\n\n/**\n * A generic collection of elements
that supports adding and removing elements.\n *\n * @param E the type of elements contained in the collection. The
mutable collection is invariant on its element type.\n */\npublic interface MutableCollection<E> : Collection<E>,
MutableIterable<E> { \n    // Query Operations\n    override fun iterator(): MutableIterator<E>\n\n    // Modification
Operations\n    /**\n     * Adds the specified element to the collection.\n     *\n     * @return `true` if the element has
been added, `false` if the collection does not support duplicates\n     * and the element is already contained in the
collection.\n     *\n     * \n public fun add(element: E): Boolean\n\n     /**\n     * Removes a single instance of the
specified element from this\n     * collection, if it is present.\n     *\n     * @return `true` if the element has been
successfully removed; `false` if it was not present in the collection.\n     *\n     * \n public fun remove(element: E):
Boolean\n\n    // Bulk Modification Operations\n    /**\n     * Adds all of the elements of the specified collection to
this collection.\n     *\n     * @return `true` if any of the specified elements was added to the collection, `false` if the
collection was not modified.\n     *\n     * \n public fun addAll(elements: Collection<E>): Boolean\n\n     /**\n
     * Removes all of this collection's elements that are also contained in the specified collection.\n     *\n     * @return
`true` if any of the specified elements was removed from the collection, `false` if the collection was not modified.\n
     *\n     * \n public fun removeAll(elements: Collection<E>): Boolean\n\n     /**\n     * Retains only the elements in this
collection that are contained in the specified collection.\n     *\n     * @return `true` if any element was removed
from the collection, `false` if the collection was not modified.\n     *\n     * \n public fun retainAll(elements:
Collection<E>): Boolean\n\n     /**\n     * Removes all elements from this collection.\n     *\n     * \n public fun clear():
Unit\n}\n\n/**\n * A generic ordered collection of elements. Methods in this interface support only read-only access
to the list;\n * read/write access is supported through the [MutableList] interface.\n * @param E the type of elements
contained in the list. The list is covariant on its element type.\n */\npublic interface List<out E> : Collection<E> { \n
    // Query Operations\n\n    override val size: Int\n    override fun isEmpty(): Boolean\n    override fun

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contains(element: @UnsafeVariance E): Boolean\n  override fun iterator(): Iterator<E>\n\n // Bulk Operations\n override fun containsAll(elements: Collection<@UnsafeVariance E>): Boolean\n\n // Positional Access Operations\n /**\n  * Returns the element at the specified index in the list.\n  */\n  public operator fun get(index: Int): E\n\n // Search Operations\n /**\n  * Returns the index of the first occurrence of the specified element in the list, or -1 if the specified\n  * element is not contained in the list.\n  */\n  public fun indexOf(element: @UnsafeVariance E): Int\n\n /**\n  * Returns the index of the last occurrence of the specified element in the list, or -1 if the specified\n  * element is not contained in the list.\n  */\n  public fun lastIndexOf(element: @UnsafeVariance E): Int\n\n // List Iterators\n /**\n  * Returns a list iterator over the elements in this list (in proper sequence).\n  */\n  public fun listIterator(): ListIterator<E>\n\n /**\n  * Returns a list iterator over the elements in this list (in proper sequence), starting at the specified [index].\n  */\n  public fun listIterator(index: Int): ListIterator<E>\n\n // View\n /**\n  * Returns a view of the portion of this list between the specified [fromIndex] (inclusive) and [toIndex] (exclusive).\n  * The returned list is backed by this list, so non-structural changes in the returned list are reflected in this list, and vice-versa.\n  *\n  * Structural changes in the base list make the behavior of the view undefined.\n  */\n  public fun subList(fromIndex: Int, toIndex: Int): List<E>\n\n\n /**\n  * A generic ordered collection of elements that supports adding and removing elements.\n  * @param E the type of elements contained in the list. The mutable list is invariant on its element type.\n  */\n  public interface MutableList<E> : List<E>, MutableCollection<E> {\n  // Modification Operations\n  /**\n   * Adds the specified element to the end of this list.\n   *\n   * @return `true` because the list is always modified as the result of this operation.\n   */\n   override fun add(element: E): Boolean\n\n   override fun remove(element: E): Boolean\n\n  // Bulk Modification Operations\n  /**\n   * Adds all of the elements of the specified collection to the end of this list.\n   *\n   * The elements are appended in the order they appear in the [elements] collection.\n   *\n   * @return `true` if the list was changed as the result of the operation.\n   */\n   override fun addAll(elements: Collection<E>): Boolean\n\n   /**\n   * Inserts all of the elements of the specified collection [elements] into this list at the specified [index].\n   *\n   * @return `true` if the list was changed as the result of the operation.\n   */\n   public fun addAll(index: Int, elements: Collection<E>): Boolean\n\n   override fun removeAll(elements: Collection<E>): Boolean\n\n   override fun retainAll(elements: Collection<E>): Boolean\n\n   override fun clear(): Unit\n\n  // Positional Access Operations\n  /**\n   * Replaces the element at the specified position in this list with the specified element.\n   *\n   * @return the element previously at the specified position.\n   */\n   public operator fun set(index: Int, element: E): E\n\n   /**\n   * Inserts an element into the list at the specified [index].\n   */\n   public fun add(index: Int, element: E): Unit\n\n   /**\n   * Removes an element at the specified [index] from the list.\n   *\n   * @return the element that has been removed.\n   */\n   public fun removeAt(index: Int): E\n\n  // List Iterators\n   override fun listIterator(): MutableListIterator<E>\n\n   override fun listIterator(index: Int): MutableListIterator<E>\n\n  // View\n   override fun subList(fromIndex: Int, toIndex: Int): MutableList<E>\n\n\n  /**\n   * A generic unordered collection of elements that does not support duplicate elements.\n   * Methods in this interface support only read-only access to the set;\n   * read/write access is supported through the [MutableSet] interface.\n   * @param E the type of elements contained in the set. The set is covariant on its element type.\n   */\n  public interface Set<out E> : Collection<E> {\n  // Query Operations\n\n   override val size: Int\n\n   override fun isEmpty(): Boolean\n\n   override fun contains(element: @UnsafeVariance E): Boolean\n\n   override fun iterator(): Iterator<E>\n\n  // Bulk Operations\n   override fun containsAll(elements: Collection<@UnsafeVariance E>): Boolean\n\n\n  /**\n   * A generic unordered collection of elements that does not support duplicate elements, and supports\n   * adding and removing elements.\n   * @param E the type of elements contained in the set. The mutable set is invariant on its element type.\n   */\n  public interface MutableSet<E> : Set<E>, MutableCollection<E> {\n  // Query Operations\n\n   override fun iterator(): MutableIterator<E>\n\n  // Modification Operations\n  /**\n   * Adds the specified element to the set.\n   *\n   * @return `true` if the element has been added, `false` if the element is already contained in the set.\n   */\n   override fun add(element: E): Boolean\n\n   override fun remove(element: E): Boolean\n\n  // Bulk Modification Operations\n\n   override fun addAll(elements: Collection<E>): Boolean\n\n   override fun removeAll(elements: Collection<E>): Boolean\n\n   override fun retainAll(elements: Collection<E>): Boolean\n\n   override fun clear(): Unit\n\n\n  /**\n   * A collection

```



that holds pairs of objects (keys and values) and supports efficiently retrieving the value corresponding to each key. Map keys are unique; the map holds only one value for each key.

Methods in this interface support only read-only access to the map; read-write access is supported through the [MutableMap] interface.

@param K the type of map keys. The map is invariant on its key type, as it can accept key as a parameter (of [containsKey] for example) and return it in [keys] set.

@param V the type of map values. The map is covariant on its value type.

```

public interface Map<K, out V> {
    // Query Operations
    /**
     * Returns the number of key/value pairs in the map.
     */
    public val size: Int
    /**
     * Returns `true` if the map is empty (contains no elements), `false` otherwise.
     */
    public fun isEmpty(): Boolean
    /**
     * Returns `true` if the map contains the specified [key].
     */
    public fun containsKey(key: K): Boolean
    /**
     * Returns `true` if the map maps one or more keys to the specified [value].
     */
    public fun containsValue(value: @UnsafeVariance V): Boolean
    /**
     * Returns the value corresponding to the given [key], or `null` if such a key is not present in the map.
     */
    public operator fun get(key: K): V?
    /**
     * Returns the value corresponding to the given [key], or [defaultValue] if such a key is not present in the map.
     */
    @since JDK 1.8
    @SinceKotlin("1.1")
    @PlatformDependent
    public fun getOrDefault(key: K, defaultValue: @UnsafeVariance V): V {
        // See default implementation in JDK sources
        return null as V
    }
    // Views
    /**
     * Returns a read-only [Set] of all keys in this map.
     */
    public val keys: Set<K>
    /**
     * Returns a read-only [Collection] of all values in this map. Note that this collection may contain duplicate values.
     */
    public val values: Collection<V>
    /**
     * Returns a read-only [Set] of all key/value pairs in this map.
     */
    public val entries: Set<Map.Entry<K, V>>
    /**
     * Represents a key/value pair held by a [Map].
     */
    public interface Entry<out K, out V> {
        /**
         * Returns the key of this key/value pair.
         */
        public val key: K
        /**
         * Returns the value of this key/value pair.
         */
        public val value: V
    }
    /**
     * A modifiable collection that holds pairs of objects (keys and values) and supports efficiently retrieving the value corresponding to each key. Map keys are unique; the map holds only one value for each key.
     */
    @param K the type of map keys. The map is invariant on its key type.
    @param V the type of map values. The mutable map is invariant on its value type.
    public interface MutableMap<K, V> : Map<K, V> {
        // Modification Operations
        /**
         * Associates the specified [value] with the specified [key] in the map.
         */
        @return the previous value associated with the key, or `null` if the key was not present in the map.
        public fun put(key: K, value: V): V?
        /**
         * Removes the specified key and its corresponding value from this map.
         */
        @return the previous value associated with the key, or `null` if the key was not present in the map.
        public fun remove(key: K): V?
        /**
         * Removes the entry for the specified key only if it is mapped to the specified value.
         */
        @return true if entry was removed
        @SinceKotlin("1.1")
        @PlatformDependent
        public fun remove(key: K, value: V): Boolean {
            // See default implementation in JDK sources
            return true
        }
        // Bulk Modification Operations
        /**
         * Updates this map with key/value pairs from the specified map [from].
         */
        public fun putAll(from: Map<out K, V>): Unit
        /**
         * Removes all elements from this map.
         */
        public fun clear(): Unit
        // Views
        /**
         * Returns a [MutableSet] of all keys in this map.
         */
        override val keys: MutableSet<K>
        /**
         * Returns a [MutableCollection] of all values in this map. Note that this collection may contain duplicate values.
         */
        override val values: MutableCollection<V>
        /**
         * Returns a [MutableSet] of all key/value pairs in this map.
         */
        override val entries: MutableSet<MutableMap.MutableEntry<K, V>>
        /**
         * Represents a key/value pair held by a [MutableMap].
         */
        public interface MutableEntry<K, V> : Map.Entry<K, V> {
            /**
             * Changes the value associated with the key of this entry.
             */
            @return the previous value corresponding to the key.
            public fun setValue(newValue: V): V
        }
    }
}

```

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// Auto-generated file. DO NOT EDIT!

```

package kotlin.collections
/**
 * An iterator over a sequence of values of type `Byte`.
 */
public abstract class ByteIterator : Iterator<Byte> {
    override final fun next() = nextByte()
    /**
     * Returns the next value in the sequence without boxing.
     */
    public abstract fun nextByte(): Byte
}

```

```

/**
 * An iterator over a sequence of values of type `Char`.
 */

```

```

*\npublic abstract class CharIterator : Iterator<Char> {\n  override final fun next() = nextChar()\n\n  /** Returns
the next value in the sequence without boxing. */\n  public abstract fun nextChar(): Char\n}\n\n/** An iterator over
a sequence of values of type `Short`. */\npublic abstract class ShortIterator : Iterator<Short> {\n  override final fun
next() = nextShort()\n\n  /** Returns the next value in the sequence without boxing. */\n  public abstract fun
nextShort(): Short\n}\n\n/** An iterator over a sequence of values of type `Int`. */\npublic abstract class IntIterator :
Iterator<Int> {\n  override final fun next() = nextInt()\n\n  /** Returns the next value in the sequence without
boxing. */\n  public abstract fun nextInt(): Int\n}\n\n/** An iterator over a sequence of values of type `Long`.
*/\npublic abstract class LongIterator : Iterator<Long> {\n  override final fun next() = nextLong()\n\n  /** Returns
the next value in the sequence without boxing. */\n  public abstract fun nextLong(): Long\n}\n\n/** An iterator
over a sequence of values of type `Float`. */\npublic abstract class FloatIterator : Iterator<Float> {\n  override final
fun next() = nextFloat()\n\n  /** Returns the next value in the sequence without boxing. */\n  public abstract fun
nextFloat(): Float\n}\n\n/** An iterator over a sequence of values of type `Double`. */\npublic abstract class
DoubleIterator : Iterator<Double> {\n  override final fun next() = nextDouble()\n\n  /** Returns the next value in
the sequence without boxing. */\n  public abstract fun nextDouble(): Double\n}\n\n/** An iterator over a sequence
of values of type `Boolean`. */\npublic abstract class BooleanIterator : Iterator<Boolean> {\n  override final fun
next() = nextBoolean()\n\n  /** Returns the next value in the sequence without boxing. */\n  public abstract fun
nextBoolean(): Boolean\n}\n\n"/*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\n// Auto-generated file. DO NOT EDIT!\n\npackage kotlin.ranges\n\n/**\n * An
iterator over a progression of values of type `Char`. \n * @property step the number by which the value is
incremented on each step.\n */\ninternal class CharProgressionIterator(first: Char, last: Char, val step: Int) :
CharIterator() {\n  private val finalElement = last.toInt()\n  private var hasNext: Boolean = if (step > 0) first <=
last else first >= last\n  private var next = if (hasNext) first.toInt() else finalElement\n\n  override fun hasNext():
Boolean = hasNext\n\n  override fun nextChar(): Char {\n    val value = next\n    if (value == finalElement)
{\n      if (!hasNext) throw kotlin.NoSuchElementException()\n      hasNext = false\n    }\n    else {\n      next += step\n    }\n    return value.toChar()\n  }\n}\n\n/**\n * An iterator over a progression of values of
type `Int`. \n * @property step the number by which the value is incremented on each step.\n */\ninternal class
IntProgressionIterator(first: Int, last: Int, val step: Int) : IntIterator() {\n  private val finalElement = last\n  private
var hasNext: Boolean = if (step > 0) first <= last else first >= last\n  private var next = if (hasNext) first else
finalElement\n\n  override fun hasNext(): Boolean = hasNext\n\n  override fun nextInt(): Int {\n    val value =
next\n    if (value == finalElement) {\n      if (!hasNext) throw kotlin.NoSuchElementException()\n      hasNext =
false\n    }\n    else {\n      next += step\n    }\n    return value\n  }\n}\n\n/**\n * An iterator
over a progression of values of type `Long`. \n * @property step the number by which the value is incremented on
each step.\n */\ninternal class LongProgressionIterator(first: Long, last: Long, val step: Long) : LongIterator() {\n
private val finalElement = last\n  private var hasNext: Boolean = if (step > 0) first <= last else first >= last\n
private var next = if (hasNext) first else finalElement\n\n  override fun hasNext(): Boolean = hasNext\n\n  override
fun nextLong(): Long {\n    val value = next\n    if (value == finalElement) {\n      if (!hasNext)
throw kotlin.NoSuchElementException()\n      hasNext = false\n    }\n    else {\n      next += step\n    }\n    return value\n  }\n}\n\n"/*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\n// Auto-generated file. DO NOT EDIT!\n\npackage kotlin.ranges\n\nimport
kotlin.internal.getProgressionLastElement\n\n/**\n * A progression of values of type `Char`. \n */\npublic open class
CharProgression(\n  internal constructor(\n    (\n      start: Char,\n      endInclusive: Char,\n      step: Int\n    )
): Iterable<Char> {\n  init {\n    if (step == 0) throw kotlin.IllegalArgumentException("Step must be non-zero.")\n    if (step == Int.MIN_VALUE) throw kotlin.IllegalArgumentException("Step must be greater than Int.MIN_VALUE to avoid overflow on negation.")\n  }\n\n  /**\n   * The first element in the progression.\n   */\n  public val first: Char = start\n\n  /**\n   * The last element in the progression.\n   */\n  public val last: Char = getProgressionLastElement(start.toInt(), endInclusive.toInt(), step).toChar()\n\n  /**\n   * The step of the

```

```

progression.\n    */\n    public val step: Int = step\n\n    override fun iterator(): CharIterator =
CharProgressionIterator(first, last, step)\n\n    /** Checks if the progression is empty. */\n    public open fun
isEmpty(): Boolean = if (step > 0) first > last else first < last\n\n    override fun equals(other: Any?): Boolean =\nother is CharProgression && (isEmpty() && other.isEmpty()) ||\n    first == other.first && last == other.last &&
step == other.step)\n\n    override fun hashCode(): Int =\n        if (isEmpty()) -1 else (31 * (31 * first.toInt() +
last.toInt()) + step)\n\n    override fun toString(): String = if (step > 0) \"$first..$last step $step\" else \"$first downTo
$last step ${-step}\""\n\n    companion object {\n        /**\n         * Creates CharProgression within the specified
bounds of a closed range.\n\n         * The progression starts with the [rangeStart] value and goes toward the
[rangeEnd] value not excluding it, with the specified [step].\n\n         * In order to go backwards the [step] must be
negative.\n\n         * [step] must be greater than `Int.MIN_VALUE` and not equal to zero.\n\n         */\n        public fun fromClosedRange(rangeStart: Char, rangeEnd: Char, step: Int): CharProgression =
CharProgression(rangeStart, rangeEnd, step)\n    }\n\n\n    /**\n     * A progression of values of type `Int`.\n     */\n    public open class IntProgression\n        internal constructor(\n            start: Int,\n            endInclusive: Int,\n            step:
Int\n        ): Iterable<Int> {\n        init {\n            if (step == 0) throw kotlin.IllegalArgumentException(\"Step must be non-
zero.\")\n            if (step == Int.MIN_VALUE) throw kotlin.IllegalArgumentException(\"Step must be greater than
Int.MIN_VALUE to avoid overflow on negation.\")\n        }\n\n        /**\n         * The first element in the progression.\n\n         */\n        public val first: Int = start\n\n        /**\n         * The last element in the progression.\n\n         */\n        public val last: Int =
getProgressionLastElement(start.toInt(), endInclusive.toInt(), step).toInt()\n\n        /**\n         * The step of the
progression.\n\n         */\n        public val step: Int = step\n\n        override fun iterator(): IntIterator =
IntProgressionIterator(first, last, step)\n\n        /** Checks if the progression is empty. */\n        public open fun
isEmpty(): Boolean = if (step > 0) first > last else first < last\n\n        override fun equals(other: Any?): Boolean =\nother is IntProgression && (isEmpty() && other.isEmpty()) ||\n            first == other.first && last == other.last &&
step == other.step)\n\n        override fun hashCode(): Int =\n            if (isEmpty()) -1 else (31 * (31 * first + last) +
step)\n\n        override fun toString(): String = if (step > 0) \"$first..$last step $step\" else \"$first downTo $last step ${-
step}\""\n\n        companion object {\n            /**\n             * Creates IntProgression within the specified bounds of a closed
range.\n\n             * The progression starts with the [rangeStart] value and goes toward the [rangeEnd] value not
excluding it, with the specified [step].\n\n             * In order to go backwards the [step] must be negative.\n\n             * [step] must be greater than `Int.MIN_VALUE` and not equal to zero.\n\n             */\n            public fun
fromClosedRange(rangeStart: Int, rangeEnd: Int, step: Int): IntProgression = IntProgression(rangeStart, rangeEnd,
step)\n        }\n\n\n        /**\n         * A progression of values of type `Long`.\n         */\n        public open class LongProgression\n            internal constructor(\n                start: Long,\n                endInclusive: Long,\n                step: Long\n            ):
Iterable<Long> {\n            init {\n                if (step == 0L) throw kotlin.IllegalArgumentException(\"Step must be non-
zero.\")\n                if (step == Long.MIN_VALUE) throw kotlin.IllegalArgumentException(\"Step must be greater than
Long.MIN_VALUE to avoid overflow on negation.\")\n            }\n\n            /**\n             * The first element in the progression.\n\n             */\n            public val first: Long = start\n\n            /**\n             * The last element in the progression.\n\n             */\n            public val last:
Long = getProgressionLastElement(start.toLong(), endInclusive.toLong(), step).toLong()\n\n            /**\n             * The step
of the progression.\n\n             */\n            public val step: Long = step\n\n            override fun iterator(): LongIterator =
LongProgressionIterator(first, last, step)\n\n            /** Checks if the progression is empty. */\n            public open fun
isEmpty(): Boolean = if (step > 0) first > last else first < last\n\n            override fun equals(other: Any?): Boolean =\nother is LongProgression && (isEmpty() && other.isEmpty()) ||\n                first == other.first && last == other.last &&
step == other.step)\n\n            override fun hashCode(): Int =\n                if (isEmpty()) -1 else (31 * (31 * (first xor (first ushr
32)) + (last xor (last ushr 32))) + (step xor (step ushr 32))).toInt()\n\n            override fun toString(): String = if (step > 0)
=\"$first..$last step $step\" else \"$first downTo $last step ${-step}\""\n\n            companion object {\n                /**\n                 *
Creates LongProgression within the specified bounds of a closed range.\n\n                 * The progression starts with the
[rangeStart] value and goes toward the [rangeEnd] value not excluding it, with the specified [step].\n\n                 * In order
to go backwards the [step] must be negative.\n\n                 * [step] must be greater than `Long.MIN_VALUE` and
not equal to zero.\n\n                 */\n                public fun fromClosedRange(rangeStart: Long, rangeEnd: Long, step: Long):
LongProgression = LongProgression(rangeStart, rangeEnd, step)\n            }\n\n\n            /**\n             * Copyright 2010-2019

```

```

JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the
Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.ranges\n\n/**\n * Represents a range of values (for example, numbers or characters).\n * See the [Kotlin language
documentation](https://kotlinlang.org/docs/reference/ranges.html) for more information.\n */\n\npublic interface
ClosedRange<T: Comparable<T>> {\n    /**\n     * The minimum value in the range.\n     */\n    public val start:
T\n\n    /**\n     * The maximum value in the range (inclusive).\n     */\n    public val endInclusive: T\n\n    /**\n     *
Checks whether the specified [value] belongs to the range.\n     */\n    public operator fun contains(value: T):
Boolean = value >= start && value <= endInclusive\n\n    /**\n     * Checks whether the range is empty.\n     */\n    public fun isEmpty(): Boolean = start > endInclusive\n}\n\n"/>\n * Copyright 2010-2015 JetBrains s.r.o.\n */\n * Licensed under the Apache License, Version 2.0 (the "License");\n * you may not use this file except in
compliance with the License.\n * You may obtain a copy of the License at\n */\n *
http://www.apache.org/licenses/LICENSE-2.0\n */\n * Unless required by applicable law or agreed to in writing,
software\n * distributed under the License is distributed on an "AS IS" BASIS,\n * WITHOUT WARRANTIES
OR CONDITIONS OF ANY KIND, either express or implied.\n * See the License for the specific language
governing permissions and\n * limitations under the License.\n */\n\npackage kotlin\n\n/**\n * The type with only
one value: the `Unit` object. This type corresponds to the `void` type in Java.\n */\n\npublic object Unit {\n    override
fun toString() = "kotlin.Unit"\n\n"/>\n * Copyright 2010-2015 JetBrains s.r.o.\n */\n * Licensed under the
Apache License, Version 2.0 (the "License");\n * you may not use this file except in compliance with the
License.\n * You may obtain a copy of the License at\n */\n *
http://www.apache.org/licenses/LICENSE-2.0\n */\n * Unless required by applicable law or agreed to in writing, software\n * distributed under the License is distributed
on an "AS IS" BASIS,\n * WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or
implied.\n * See the License for the specific language governing permissions and\n * limitations under the
License.\n */\n\npackage kotlin.annotation\n\nimport kotlin.annotation.AnnotationTarget.*\n\n/**\n * Contains the
list of code elements which are the possible annotation targets\n */\n\npublic enum class AnnotationTarget {\n    /**\n     *
Class, interface or object, annotation class is also included\n     */\n    CLASS,\n    /**\n     * Annotation class only\n     */\n    ANNOTATION_CLASS,\n    /**\n     * Generic type parameter (unsupported yet)\n     */\n    TYPE_PARAMETER,\n    /**\n     *
Property\n     */\n    PROPERTY,\n    /**\n     * Field, including property's backing field\n     */\n    FIELD,\n    /**\n     * Local variable\n     */\n    LOCAL_VARIABLE,\n    /**\n     * Value parameter of a function or a constructor\n     */\n    VALUE_PARAMETER,\n    /**\n     * Constructor only (primary or secondary)\n     */\n    CONSTRUCTOR,\n    /**\n     *
Function (constructors are not included)\n     */\n    FUNCTION,\n    /**\n     * Property getter only\n     */\n    PROPERTY_GETTER,\n    /**\n     * Property setter only\n     */\n    PROPERTY_SETTER,\n    /**\n     * Type usage\n     */\n    TYPE,\n    /**\n     * Any expression\n     */\n    EXPRESSION,\n    /**\n     * File\n     */\n    FILE,\n    /**\n     * Type alias\n     */\n    TYPEALIAS\n}\n\n/**\n * Contains the list of possible annotation's retentions.\n */\n *
Determines how an annotation is stored in binary output.\n */\n\npublic enum class AnnotationRetention {\n    /**\n     *
Annotation isn't stored in binary output\n     */\n    SOURCE,\n    /**\n     * Annotation is stored in binary output, but invisible
for reflection\n     */\n    BINARY,\n    /**\n     * Annotation is stored in binary output and visible for reflection (default
retention)\n     */\n    RUNTIME\n}\n\n/**\n * This meta-annotation indicates the kinds of code elements which are
possible targets of an annotation.\n */\n * If the target meta-annotation is not present on an annotation declaration,
the annotation is applicable to the following elements:\n * [CLASS], [PROPERTY], [FIELD],
[LOCAL_VARIABLE], [VALUE_PARAMETER], [CONSTRUCTOR], [FUNCTION], [PROPERTY_GETTER],
[PROPERTY_SETTER].\n */\n * @property allowedTargets list of allowed annotation targets\n
*/\n\n@Target(AnnotationTarget.ANNOTATION_CLASS)\n@MustBeDocumented\npublic annotation class
Target(vararg val allowedTargets: AnnotationTarget)\n\n/**\n * This meta-annotation determines whether an
annotation is stored in binary output and visible for reflection. By default, both are true.\n */\n * @property value
necessary annotation retention (RUNTIME, BINARY or SOURCE)\n
*/\n\n@Target(AnnotationTarget.ANNOTATION_CLASS)\npublic annotation class Retention(val value:
AnnotationRetention = AnnotationRetention.RUNTIME)\n\n/**\n * This meta-annotation determines that an
annotation is applicable twice or more on a single code element\n
*/\n

```

```

*\n@Target(AnnotationTarget.ANNOTATION_CLASS)\npublic annotation class Repeatable\n\n/**\n * This meta-annotation determines that an annotation is a part of public API and therefore should be included in the generated\n * documentation for the element to which the annotation is applied.\n
*\n@Target(AnnotationTarget.ANNOTATION_CLASS)\npublic annotation class MustBeDocumented\n"/*\n * Copyright 2010-2016 JetBrains s.r.o.\n *\n * Licensed under the Apache License, Version 2.0 (the "License");\n *\n * you may not use this file except in compliance with the License.\n *\n * You may obtain a copy of the License at\n *\n * http://www.apache.org/licenses/LICENSE-2.0\n *\n * Unless required by applicable law or agreed to in writing,\n *\n * software\n *\n * distributed under the License is distributed on an "AS IS" BASIS,\n *\n * WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.\n *\n * See the License for the specific language governing permissions and\n *\n * limitations under the License.\n
*\n\npackage kotlin.internal\n\n/**\n * Specifies that the corresponding type parameter is not used for unsafe operations such as casts or 'is' checks\n * That means it's completely safe to use generic types as argument for such parameter.\n
*\n@Target(AnnotationTarget.TYPE_PARAMETER)\n@Retention(AnnotationRetention.BINARY)\ninternal annotation class PureReifiable\n\n/**\n * Specifies that the corresponding built-in method exists depending on platform.\n * Current implementation for JVM looks whether method with same JVM descriptor exists in the module JDK.\n * For example MutableMap.remove(K, V) available only if corresponding\n * method 'java/util/Map.remove(Ljava/lang/Object;Ljava/lang/Object;)Z' is defined in JDK (i.e. for major versions >= 8)\n
*\n@Target(AnnotationTarget.FUNCTION)\n@Retention(AnnotationRetention.BINARY)\ninternal annotation class PlatformDependent\n"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*\n\npackage kotlin.internal\n\n// a mod b (in arithmetical sense)\nprivate fun mod(a: Int, b: Int): Int {\n    val mod = a % b\n    return if (mod >= 0) mod else mod + b\n}\n\nprivate fun mod(a: Long, b: Long): Long {\n    val mod = a % b\n    return if (mod >= 0) mod else mod + b\n}\n\n// (a - b) mod c\nprivate fun differenceModulo(a: Int, b: Int, c: Int): Int {\n    return mod(mod(a, c) - mod(b, c), c)\n}\n\nprivate fun differenceModulo(a: Long, b: Long, c: Long): Long {\n    return mod(mod(a, c) - mod(b, c), c)\n}\n\n/**\n * Calculates the final element of a bounded arithmetic progression, i.e. the last element of the progression which is in the range\n * from [start] to [end] in case of a positive [step], or from [end] to [start] in case of a negative\n * [step].\n *\n * No validation on passed parameters is performed. The given parameters should satisfy the condition:\n *\n * - either `step > 0` and `start <= end`,\n * - or `step < 0` and `start >= end`.\n *\n * @param start first element of the progression\n * @param end ending bound for the progression\n * @param step increment, or difference of successive elements in the progression\n * @return the final element of the progression\n *
*\n@suppress\n *\n@PublishedApi\ninternal fun getProgressionLastElement(start: Int, end: Int, step: Int): Int = when {\n    step > 0 -> if (start >= end) end else end - differenceModulo(end, start, step)\n    step < 0 -> if (start <= end) end else end + differenceModulo(start, end, -step)\n    else -> throw kotlin.IllegalArgumentException("Step is zero.")\n}\n\n/**\n * Calculates the final element of a bounded arithmetic progression, i.e. the last element of the progression which is in the range\n * from [start] to [end] in case of a positive [step], or from [end] to [start] in case of a negative\n * [step].\n *\n * No validation on passed parameters is performed. The given parameters should satisfy the condition:\n *\n * - either `step > 0` and `start <= end`,\n * - or `step < 0` and `start >= end`.\n *\n * @param start first element of the progression\n * @param end ending bound for the progression\n * @param step increment, or difference of successive elements in the progression\n * @return the final element of the progression\n *
*\n@suppress\n *\n@PublishedApi\ninternal fun getProgressionLastElement(start: Long, end: Long, step: Long): Long = when {\n    step > 0 -> if (start >= end) end else end - differenceModulo(end, start, step)\n    step < 0 -> if (start <= end) end else end + differenceModulo(start, end, -step)\n    else -> throw\n    kotlin.IllegalArgumentException("Step is zero.")\n}\n"/*\n * Copyright 2010-2015 JetBrains s.r.o.\n *\n * Licensed under the Apache License, Version 2.0 (the "License");\n *\n * you may not use this file except in compliance with the License.\n *\n * You may obtain a copy of the License at\n *\n * http://www.apache.org/licenses/LICENSE-2.0\n *\n * Unless required by applicable law or agreed to in writing,\n *\n * software\n *\n * distributed under the License is distributed on an "AS IS" BASIS,\n *\n * WITHOUT WARRANTIES

```

OR CONDITIONS OF ANY KIND, either express or implied.  
 \* See the License for the specific language governing permissions and  
 \* limitations under the License.  
 \* Represents a parameter passed to a function or a property getter/setter,  
 \* including `this` and extension receiver parameters.  
 \* public interface KParameter : KAnnotatedElement {  
 \* 0-based index of this parameter in the parameter list of its containing callable.  
 \* public val index: Int  
 \* Name of this parameter as it was declared in the source code,  
 \* or `null` if the parameter has no name or its name is not available at runtime.  
 \* Examples of nameless parameters include `this` instance for member functions,  
 \* extension receiver for extension functions or properties, parameters of Java methods  
 \* compiled without the debug information, and others.  
 \* public val name: String?  
 \* Type of this parameter. For a `vararg` parameter, this is the type of the corresponding array,  
 \* not the individual element.  
 \* public val type: KType  
 \* Kind of this parameter.  
 \* public val kind: Kind  
 \* Kind represents a particular position of the parameter declaration in the source code,  
 \* such as an instance, an extension receiver parameter or a value parameter.  
 \* public enum class Kind {  
 \* Instance required to make a call to the member, or an outer class instance for an inner class constructor.  
 \* INSTANCE,  
 \* Extension receiver of an extension function or property.  
 \* EXTENSION\_RECEIVER,  
 \* Ordinary named value parameter.  
 \* VALUE,  
 \* }  
 \* `true` if this parameter is optional and can be omitted when making a call via [KCallable.callBy], or `false` otherwise.  
 \* A parameter is optional in any of the two cases:  
 \* 1. The default value is provided at the declaration of this parameter.  
 \* 2. The parameter is declared in a member function and one of the corresponding parameters in the super functions is optional.  
 \* public val isOptional: Boolean  
 \* `true` if this parameter is `vararg`.  
 \* See the [Kotlin language documentation](https://kotlinlang.org/docs/reference/functions.html#variable-number-of-arguments) for more information.  
 \* @SinceKotlin("1.1")  
 \* public val isVararg: Boolean  
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 \* package kotlin.reflect  
 \* Represents a type. Type is usually either a class with optional type arguments,  
 \* or a type parameter of some declaration, plus nullability.  
 \* public interface KType : KAnnotatedElement {  
 \* The declaration of the classifier used in this type.  
 \* For example, in the type `List<String>` the classifier would be the [KClass] instance for [List].  
 \* Returns `null` if this type is not denotable in Kotlin, for example if it is an intersection type.  
 \* @SinceKotlin("1.1")  
 \* public val classifier: KClassifier?  
 \* Type arguments passed for the parameters of the classifier in this type.  
 \* For example, in the type `Array<out Number>` the only type argument is `out Number`.  
 \* In case this type is based on an inner class, the returned list contains the type arguments provided for the innermost class first,  
 \* then its outer class, and so on.  
 \* For example, in the type `Outer<A, B>.Inner<C, D>` the returned list is `[C, D, A, B]`.  
 \* @SinceKotlin("1.1")  
 \* public val arguments: List<KTypeProjection>  
 \* `true` if this type was marked nullable in the source code.  
 \* For Kotlin types, it means that `null` value is allowed to be represented by this type.  
 \* In practice it means that the type was declared with a question mark at the end.  
 \* For non-Kotlin types, it means the type or the symbol which was declared with this type  
 \* is annotated with a runtime-retained nullability annotation such as [javax.annotation.Nullable].  
 \* Note that even if [isMarkedNullable] is false, values of the type can still be `null`.  
 \* This may happen if it is a type of the type parameter with a nullable upper bound:  
 \* fun <T> foo(t: T) {  
 \* // isMarkedNullable == false for t's type, but t can be null here when T = "Any?"  
 \* }  
 \* public val isMarkedNullable: Boolean  
 \* Represents a type projection. Type projection is usually the argument to another type in a type usage.  
 \* For example, in the type `Array<out Number>`, `out Number` is the covariant projection of the type represented by the class `Number`.  
 \* Type projection is either the star projection, or an entity consisting of a specific type plus optional variance.  
 \* See the [Kotlin language documentation](https://kotlinlang.org/docs/reference/generics.html#type-projections) for more information.  
 \* @SinceKotlin("1.1")  
 \* public data class KTypeProjection constructor(  
 \* The use-site variance specified in the projection, or `null` if this is a star projection.  
 \* public val variance: KVariance?,

```

/**\n
 * The type specified in the projection, or `null` if this is a star projection.\n
 */\n
public val type:
KType?()\n
{\n
    public companion object {\n
        /**\n
         * Star projection, denoted by the `*` character.\n
         * For example, in the type `KClass<*>`, `*` is the star projection.\n
         * See the [Kotlin language documentation](https://kotlinlang.org/docs/reference/generics.html#star-projections)\n
         * for more information.\n
         */\n
        public val STAR: KTypeProjection = KTypeProjection(null, null)\n
        /**\n
         * Creates an invariant projection of a given type. Invariant projection is just the type itself,\n
         * without any use-site variance modifiers applied to it.\n
         * For example, in the type `Set<String>`, `String` is an invariant projection of the type represented by the class `String`.\n
         */\n
        public fun invariant(type: KType): KTypeProjection =\n
            KTypeProjection(KVariance.INVARIANT, type)\n
        /**\n
         * Creates a contravariant projection of a given type, denoted by the `in` modifier applied to a type.\n
         * For example, in the type `MutableList<in Number>`, `in Number` is a contravariant projection of the type of class `Number`.\n
         */\n
        public fun contravariant(type: KType): KTypeProjection =\n
            KTypeProjection(KVariance.IN, type)\n
        /**\n
         * Creates a covariant projection of a given type, denoted by the `out` modifier applied to a type.\n
         * For example, in the type `Array<out Number>`, `out Number` is a covariant projection of the type of class `Number`.\n
         */\n
        public fun covariant(type: KType): KTypeProjection =\n
            KTypeProjection(KVariance.OUT, type)\n
    }\n
}\n
}"/\n
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 * limitations under the License.\n
/\n
package kotlin.reflect\n
/**\n
 * Represents variance applied to a type parameter on the declaration site (*declaration-site variance*),\n
 * or to a type in a projection (*use-site variance*).\n
 * See the [Kotlin language documentation](https://kotlinlang.org/docs/reference/generics.html#variance)\n
 * for more information.\n
 */\n
@see [KTypeParameter.variance]\n
@see [KTypeProjection]\n
@SinceKotlin("1.1")\n
enum class KVariance {\n
    /**\n
     * The affected type parameter or type is *invariant*, which means it has no variance applied to it.\n
     */\n
    INVARIANT,\n
    /**\n
     * The affected type parameter or type is *contravariant*.\n
     * Denoted by the `in` modifier in the source code.\n
     */\n
    IN,\n
    /**\n
     * The affected type parameter or type is *covariant*.\n
     * Denoted by the `out` modifier in the source code.\n
     */\n
    OUT,\n
}\n
"/\n
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 * WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.\n
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 * limitations under the License.\n
/\n
package kotlin.reflect\n
/**\n
 * Visibility is an aspect of a Kotlin declaration regulating where that declaration is accessible in the source code.\n
 * Visibility can be changed with one of the following modifiers: `public`, `protected`, `internal`, `private`.\n
 * Note that some Java visibilities such as package-private and protected (which also gives access to items from the same package)\n
 * cannot be represented in Kotlin, so there's no [KVisibility] value corresponding to them.\n
 * See the [Kotlin language documentation](https://kotlinlang.org/docs/reference/visibility-modifiers.html)\n
 * for more information.\n
 */\n
@SinceKotlin("1.1")\n
enum class KVisibility {\n
    /**\n
     * Visibility of declarations marked with the `public` modifier, or with no modifier at all.\n
     */\n
    PUBLIC,\n
    /**\n
     * Visibility of declarations marked with the `protected` modifier.\n
     */\n
    PROTECTED,\n
    /**\n
     * Visibility of declarations marked with the `internal` modifier.\n
     */\n
    INTERNAL,\n
    /**\n
     * Visibility of declarations marked with the `private` modifier.\n
     */\n
    PRIVATE,\n
}\n
"/\n
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 * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
 */\n
@JsName("arrayIterator")\n
internal fun arrayIterator(array: dynamic, type: String?) = when (type) {\n
    null -> {\n
        val arr: Array<dynamic> = array\n
        object : Iterator<dynamic> {\n

```

```

var index = 0\n      override fun hasNext() = index < arr.size\n      override fun next() = if (index <
arr.size) arr[index++] else throw NoSuchElementException("$index")\n    }\n    }\n    \"BooleanArray\"\n->
booleanArrayIterator(array)\n    \"ByteArray\"\n-> byteArrayIterator(array)\n    \"ShortArray\"\n->
shortArrayIterator(array)\n    \"CharArray\"\n-> charArrayIterator(array)\n    \"IntArray\"\n-> intArrayIterator(array)\n
\"LongArray\"\n-> longArrayIterator(array)\n    \"FloatArray\"\n-> floatArrayIterator(array)\n    \"DoubleArray\"\n->
doubleArrayIterator(array)\n    else -> throw IllegalStateException(\"Unsupported type argument for arrayIterator:
$type\")\n}\n\n@JsName(\"booleanArrayIterator\")\ninternal fun booleanArrayIterator(array: BooleanArray) =
object : BooleanIterator() {\n    var index = 0\n    override fun hasNext() = index < array.size\n    override fun
nextBoolean() = if (index < array.size) array[index++] else throw
NoSuchElementException(\"$index\")\n}\n\n@JsName(\"byteArrayIterator\")\ninternal fun byteArrayIterator(array:
ByteArray) = object : ByteIterator() {\n    var index = 0\n    override fun hasNext() = index < array.size\n    override
fun nextByte() = if (index < array.size) array[index++] else throw
NoSuchElementException(\"$index\")\n}\n\n@JsName(\"shortArrayIterator\")\ninternal fun
shortArrayIterator(array: ShortArray) = object : ShortIterator() {\n    var index = 0\n    override fun hasNext() =
index < array.size\n    override fun nextShort() = if (index < array.size) array[index++] else throw
NoSuchElementException(\"$index\")\n}\n\n@JsName(\"charArrayIterator\")\ninternal fun charArrayIterator(array:
CharArray) = object : CharIterator() {\n    var index = 0\n    override fun hasNext() = index < array.size\n    override
fun nextChar() = if (index < array.size) array[index++] else throw
NoSuchElementException(\"$index\")\n}\n\n@JsName(\"intArrayIterator\")\ninternal fun intArrayIterator(array:
IntArray) = object : IntIterator() {\n    var index = 0\n    override fun hasNext() = index < array.size\n    override fun
nextInt() = if (index < array.size) array[index++] else throw
NoSuchElementException(\"$index\")\n}\n\n@JsName(\"floatArrayIterator\")\ninternal fun
floatArrayIterator(array: FloatArray) = object : FloatIterator() {\n    var index = 0\n    override fun hasNext() = index
< array.size\n    override fun nextFloat() = if (index < array.size) array[index++] else throw
NoSuchElementException(\"$index\")\n}\n\n@JsName(\"doubleArrayIterator\")\ninternal fun
doubleArrayIterator(array: DoubleArray) = object : DoubleIterator() {\n    var index = 0\n    override fun hasNext()
= index < array.size\n    override fun nextDouble() = if (index < array.size) array[index++] else throw
NoSuchElementException(\"$index\")\n}\n\n@JsName(\"longArrayIterator\")\ninternal fun longArrayIterator(array:
LongArray) = object : LongIterator() {\n    var index = 0\n    override fun hasNext() = index < array.size\n
override fun nextLong() = if (index < array.size) array[index++] else throw
NoSuchElementException(\"$index\")\n}\n\n@JsName(\"PropertyMetadata\")\ninternal class
PropertyMetadata(@JsName(\"callableName\") val name:
String)\n\n@JsName(\"noWhenBranchMatched\")\ninternal fun noWhenBranchMatched(): Nothing = throw
NoWhenBranchMatchedException()\n\n@JsName(\"subSequence\")\ninternal fun subSequence(c: CharSequence,
startIndex: Int, endIndex: Int): CharSequence {\n    if (c is String) {\n        return c.substring(startIndex, endIndex)\n
    } else {\n        return c.asDynamic().`subSequence_vux9f0$`(startIndex, endIndex)\n
    }\n}\n\n@JsName(\"captureStack\")\ninternal fun captureStack(baseClass: JsClass<in Throwable>, instance:
Throwable) {\n    if (js(\"Error\").captureStackTrace) {\n        js(\"Error\").captureStackTrace(instance,
instance::class.js);\n    } else {\n        instance.asDynamic().stack = js(\"new Error()\").stack;\n
    }\n}\n\n@JsName(\"newThrowable\")\ninternal fun newThrowable(message: String?, cause: Throwable?):
Throwable {\n    val throwable = js(\"new Error()\")\n    throwable.message = if (js.TypeOf(message) ==
\"undefined\") {\n        if (cause != null) cause.toString() else null\n    } else {\n        message\n    }\n
throwable.cause = cause\n    throwable.name = \"Throwable\"\n    return
throwable\n}\n\n@JsName(\"BoxedChar\")\ninternal class BoxedChar(val c: Int) : Comparable<Int> {\n    override
fun equals(other: Any?): Boolean {\n        return other is BoxedChar && c == other.c\n    }\n    override fun
hashCode(): Int {\n        return c\n    }\n    override fun toString(): String {\n        return
js(\"this.c\").unsafeCast<Char>().toString()\n    }\n    override fun compareTo(other: Int): Int {\n        return
js(\"this.c - other\").unsafeCast<Int>()\n    }\n    @JsName(\"valueOf\")\n    public fun valueOf(): Int {\n

```



```

return c\n } \n\n@kotlin.internal.InlineOnly\ninternal inline fun <T> concat(args: Array<T>): T {\n    val typed
= js(\"Array\")(args.size)\n    for (i in args.indices) {\n        val arr = args[i]\n        if (arr !is Array<*>) {\n
typed[i] = js(\"[]\").slice.call(arr)\n        } else {\n            typed[i] = arr\n        }\n    }\n    return
js(\"[]\").concat.apply(js(\"[]\"), typed);\n}\n\n/** Concat regular Array's and TypedArray's into an Array.\n
*\n@PublishedApi\n@JsName(\"arrayConcat\")\n@Suppress(\"UNUSED_PARAMETER\")\ninternal fun <T>
arrayConcat(a: T, b: T): T {\n    return concat(js(\"arguments\"))\n}\n\n/** Concat primitive arrays. Main use:
prepare vararg arguments.\n
* For compatibility with 1.1.0 the arguments may be a mixture of Array's and
TypedArray's.\n
*\n
* If the first argument is TypedArray (Byte-, Short-, Char-, Int-, Float-, and DoubleArray)
returns a TypedArray, otherwise an Array.\n
* If the first argument has the $type$ property (Boolean-, Char-, and
LongArray) copy its value to result.$type$.\n
* If the first argument is a regular Array without the $type$ property
default to arrayConcat.\n
*\n@PublishedApi\n@JsName(\"primitiveArrayConcat\")\n@Suppress(\"UNUSED_PARAMETER\")\ninternal
fun <T> primitiveArrayConcat(a: T, b: T): T {\n    val args: Array<T> = js(\"arguments\")\n    if (a is Array<*> &&
a.asDynamic().`$type$` === undefined) {\n        return concat(args)\n    } else {\n        var size = 0\n        for (i in
args.indices) {\n            size += args[i].asDynamic().length as Int\n        }\n        val result = js(\"new
a.constructor(size)\")\n        kotlin.copyArrayType(a, result)\n        size = 0\n        for (i in args.indices) {\n            val
arr = args[i].asDynamic()\n            for (j in 0 until arr.length) {\n                result[size++] = arr[j]\n            }\n        }\n        return result\n    }\n}\n\n@JsName(\"booleanArrayOf\")\ninternal fun booleanArrayOf() =
withType(\"BooleanArray\", js(\"[]\").slice.call(arguments))\n}\n\n@JsName(\"charArrayOf\") // The arguments have
to be slice'd here because of Rhino (see KT-16974)\ninternal fun charArrayOf() = withType(\"CharArray\", js(\"new
Uint16Array([]\").slice.call(arguments))\n}\n\n@JsName(\"longArrayOf\")\ninternal fun longArrayOf() =
withType(\"LongArray\",
js(\"[]\").slice.call(arguments))\n}\n\n@JsName(\"withType\")\n@kotlin.internal.InlineOnly\ninternal inline fun
withType(type: String, array: dynamic): dynamic {\n    array.`$type$` = type\n    return array\n}\n\n/*\n
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*/\n\npackage kotlin.js\n\n/**\n
* Function corresponding to JavaScript's `typeof` operator\n
*\n@kotlin.internal.InlineOnly\n@Suppress(\"UNUSED_PARAMETER\")\npublic inline fun jsTypeOf(a: Any?):
String = js(\"typeof a\")\n}\n\n/*\n
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license/LICENSE.txt file.\n
*/\n\n@file:Suppress(\"UNUSED_PARAMETER\",
\"NOTHING_TO_INLINE\")\n\npackage kotlin\n\n/**\n
* Returns an empty array of the specified type [T].\n
*\n@public inline fun <T> emptyArray(): Array<T> = js(\"[]\")\n}\n\n@library\n@public fun <T> arrayOf(vararg
elements: T): Array<T> = definedExternally\n}\n\n@library\n@public fun doubleArrayOf(vararg elements: Double):
DoubleArray = definedExternally\n}\n\n@library\n@public fun floatArrayOf(vararg elements: Float): FloatArray =
definedExternally\n}\n\n@library\n@public fun longArrayOf(vararg elements: Long): LongArray =
definedExternally\n}\n\n@library\n@public fun intArrayOf(vararg elements: Int): IntArray =
definedExternally\n}\n\n@library\n@public fun charArrayOf(vararg elements: Char): CharArray =
definedExternally\n}\n\n@library\n@public fun shortArrayOf(vararg elements: Short): ShortArray =
definedExternally\n}\n\n@library\n@public fun byteArrayOf(vararg elements: Byte): ByteArray =
definedExternally\n}\n\n@library\n@public fun booleanArrayOf(vararg elements: Boolean): BooleanArray =
definedExternally\n}\n\n/**\n
* Creates a new instance of the [Lazy] that uses the specified initialization function
[initializer].\n
*\n@public actual fun <T> lazy(initializer: () -> T): Lazy<T> = UnsafeLazyImpl(initializer)\n}\n\n/**\n
* Creates a new instance of the [Lazy] that uses the specified initialization function [initializer].\n
*\n
* The [mode] parameter is ignored.\n
*\n@public actual fun <T> lazy(mode: LazyThreadSafetyMode, initializer: () -> T): Lazy<T> =
UnsafeLazyImpl(initializer)\n}\n\n/**\n
* Creates a new instance of the [Lazy] that uses the specified initialization
function [initializer].\n
*\n
* The [lock] parameter is ignored.\n
*\n@public actual fun <T> lazy(lock: Any?,
initializer: () -> T): Lazy<T> = UnsafeLazyImpl(initializer)\n}\n\ninternal fun fillFrom(src: dynamic, dst: dynamic):

```

```

dynamic {\n    val srcLen: Int = src.length\n    val dstLen: Int = dst.length\n    var index: Int = 0\n    while (index <
srcLen && index < dstLen) dst[index] = src[index++]\n    return dst\n}\n\ninternal fun arrayCopyResize(source:
dynamic, newSize: Int, defaultValue: Any?): dynamic {\n    val result = source.slice(0, newSize)\n
copyArrayType(source, result)\n    var index: Int = source.length\n    if (newSize > index) {\n        result.length =
newSize\n        while (index < newSize) result[index++] = defaultValue\n    }\n    return result\n}\n\ninternal fun
<T> arrayPlusCollection(array: dynamic, collection: Collection<T>): dynamic {\n    val result = array.slice()\n
result.length += collection.size\n    copyArrayType(array, result)\n    var index: Int = array.length\n    for (element in
collection) result[index++] = element\n    return result\n}\n\ninternal fun <T> fillFromCollection(dst: dynamic,
startIndex: Int, collection: Collection<T>): dynamic {\n    var index = startIndex\n    for (element in collection)
dst[index++] = element\n    return dst\n}\n\ninternal inline fun copyArrayType(from: dynamic, to: dynamic) {\n    if
(from.`$type$` !== undefined) {\n        to.`$type$` = from.`$type$`\n    }\n}\n\ninternal inline fun jsIsType(obj:
dynamic, jsClass: dynamic) = js("Kotlin").isType(obj, jsClass)", /*\n * Copyright 2010-2018 JetBrains s.r.o. and
Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that
can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.coroutines\n\nimport
kotlin.coroutines.intrinsics.COROUTINE_SUSPENDED\n\n@SinceKotlin("1.3")\n@JsName("CoroutineImpl")\n
ninternal abstract class CoroutineImpl(private val resultContinuation: Continuation<Any?>) : Continuation<Any?>
{\n    protected var state = 0\n    protected var exceptionState = 0\n    protected var result: Any? = null\n    protected
var exception: Throwable? = null\n    protected var finallyPath: Array<Int>? = null\n\n    public override val context:
CoroutineContext = resultContinuation.context\n\n    private var intercepted_: Continuation<Any?>? = null\n\n    public fun intercepted(): Continuation<Any?> =\n        intercepted_ ?:
(context[ContinuationInterceptor]?.interceptContinuation(this) ?: this)\n        .also { intercepted_ = it }\n\n    override fun resumeWith(result: Result<Any?>) {\n        var current = this\n        var currentResult: Any? =
result.getOrNull()\n        var currentException: Throwable? = result.exceptionOrNull()\n        // This loop unrolls
recursion in current.resumeWith(param) to make saner and shorter stack traces on resume\n        while (true) {\n
            with(current) {\n                val completion = resultContinuation\n                // Set result and exception fields in
the current continuation\n                if (currentException == null) {\n                    this.result = currentResult\n
                } else {\n                    state = exceptionState\n                    exception = currentException\n                }\n
            }\n            try {\n                val outcome = doResume()\n                if (outcome === COROUTINE_SUSPENDED)\n                    return\n                currentResult = outcome\n                currentException = null\n            } catch (exception:
dynamic) { // Catch all exceptions\n                currentResult = null\n                currentException =
exception.unsafeCast<Throwable>()\n            }\n            releaseIntercepted() // this state machine instance is
terminating\n\n            if (completion is CoroutineImpl) {\n                // unrolling recursion via loop\n                current = completion\n            } else {\n                // top-level completion reached -- invoke and return\n                currentException?.let {\n                    completion.resumeWithException(it)\n                } ?:\n                completion.resume(currentResult)\n                return\n            }\n        }\n    }\n\n    private fun
releaseIntercepted() {\n        val intercepted = intercepted_ \n        if (intercepted != null && intercepted !== this) {\n
            context[ContinuationInterceptor]!!.releaseInterceptedContinuation(intercepted)\n        }\n        this.intercepted_
= CompletedContinuation // just in case\n    }\n\n    protected abstract fun doResume(): Any?\n}\n\ninternal object
CompletedContinuation : Continuation<Any?> {\n    override val context: CoroutineContext\n        get() =
error("This continuation is already complete")\n\n    override fun resumeWith(result: Result<Any?>) {\n
        error("This continuation is already complete")\n    }\n\n    override fun toString(): String = "This continuation is
already complete"\n}\n\n/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\n@file:Suppress("UNCHECKED_CAST",
"RedundantVisibilityModifier")\n\npackage kotlin\n\nimport kotlin.contracts.*\nimport
kotlin.internal.InlineOnly\nimport kotlin.jvm.JvmField\n\n/**\n * A discriminated union that encapsulates a
successful outcome with a value of type [T]\n * or a failure with an arbitrary [Throwable] exception.\n
*/\n\n@Suppress("NON_PUBLIC_PRIMARY_CONSTRUCTOR_OF_INLINE_CLASS")\n@SinceKotlin("1.3")\n

```

```

public inline class Result<out T> @PublishedApi internal constructor(\n  @PublishedApi\n  internal val value:
Any?)\n : Serializable {\n // discovery\n\n /**\n * Returns `true` if this instance represents a successful
outcome.\n * In this case [isFailure] returns `false`.\n */\n * In this case [isSuccess]
returns `true` if this instance represents a failed outcome.\n * In this case [isFailure]
returns `false`.\n */\n * Returns the encapsulated value if this instance represents [success][Result.isSuccess] or
`null`\n * if it is [failure][Result.isFailure].\n */\n * This function is a shorthand for `getOrElse { null }` (see
[getOrElse]) or\n * `fold(onSuccess = { it }, onFailure = { null })` (see [fold]).\n */\n @InlineOnly\n public
inline fun getOrNull(): T? =\n when {\n isFailure -> null\n else -> value as T\n }\n\n /**\n * Returns the encapsulated [Throwable] exception if this instance represents [failure][isFailure] or `null`\n * if it
is [success][isSuccess].\n */\n * This function is a shorthand for `fold(onSuccess = { null }, onFailure = { it })`
(see [fold]).\n */\n public fun exceptionOrNull(): Throwable? =\n when (value) {\n is Failure ->
value.exception\n else -> null\n }\n\n /**\n * Returns a string `Success(v)` if this instance represents
[success][Result.isSuccess]\n * where `v` is a string representation of the value or a string `Failure(x)` if\n * it
is [failure][isFailure] where `x` is a string representation of the exception.\n */\n public override fun toString():
String =\n when (value) {\n is Failure -> value.toString() // "Failure($exception)"
\n else ->
"Success($value)"
\n\n // companion with constructors\n\n /**\n * Companion object for [Result]
class that contains its constructor functions\n * [success] and [failure].\n */\n public companion object {\n
/**\n * Returns an instance that encapsulates the given [value] as successful value.\n */\n
@InlineOnly\n public inline fun <T> success(value: T): Result<T> =\n Result(value)\n\n /**\n
* Returns an instance that encapsulates the given [Throwable] [exception] as failure.\n */\n @InlineOnly\n
public inline fun <T> failure(exception: Throwable): Result<T> =\n Result(createFailure(exception))\n
}\n\n internal class Failure(\n @JvmField\n val exception: Throwable\n ): Serializable {\n override
fun equals(other: Any?): Boolean = other is Failure && exception == other.exception\n override fun
hashCode(): Int = exception.hashCode()\n override fun toString(): String = "Failure($exception)"
}\n\n /**\n * Creates an instance of internal marker [Result.Failure] class to\n * make sure that this class is not
exposed in ABI.\n */\n @PublishedApi\n @SinceKotlin("1.3")\n internal fun createFailure(exception: Throwable):
Any =\n Result.Failure(exception)\n\n /**\n * Throws exception if the result is failure. This internal function
minimizes\n * inlined bytecode for [getOrThrow] and makes sure that in the future we can\n * add some exception-
augmenting logic here (if needed).\n */\n @PublishedApi\n @SinceKotlin("1.3")\n internal fun
Result<*>.throwOnFailure() {\n if (value is Result.Failure) throw value.exception\n }\n\n /**\n * Calls the
specified function [block] and returns its encapsulated result if invocation was successful,\n * catching any
[Throwable] exception that was thrown from the [block] function execution and encapsulating it as a failure.\n
*/\n @InlineOnly\n @SinceKotlin("1.3")\n public inline fun <R> runCatching(block: () -> R): Result<R> {\n
return try {\n Result.success(block())\n } catch (e: Throwable) {\n Result.failure(e)\n }\n }\n\n /**\n *
Calls the specified function [block] with `this` value as its receiver and returns its encapsulated result if invocation
was successful,\n * catching any [Throwable] exception that was thrown from the [block] function execution and
encapsulating it as a failure.\n */\n @InlineOnly\n @SinceKotlin("1.3")\n public inline fun <T, R>
T.runCatching(block: T.() -> R): Result<R> {\n return try {\n Result.success(block())\n } catch (e:
Throwable) {\n Result.failure(e)\n }\n }\n\n // -- extensions ---\n\n /**\n * Returns the encapsulated value if this
instance represents [success][Result.isSuccess] or throws the encapsulated [Throwable] exception\n * if it is
[failure][Result.isFailure].\n */\n * This function is a shorthand for `getOrElse { throw it }` (see [getOrElse]).\n
*/\n @InlineOnly\n @SinceKotlin("1.3")\n public inline fun <T> Result<T>.getOrThrow(): T {\n
throwOnFailure()\n return value as T\n }\n\n /**\n * Returns the encapsulated value if this instance represents
[success][Result.isSuccess] or the\n * result of [onFailure] function for the encapsulated [Throwable] exception if it
is [failure][Result.isFailure].\n */\n * Note, that this function rethrows any [Throwable] exception thrown by
[onFailure] function.\n */\n * This function is a shorthand for `fold(onSuccess = { it }, onFailure = onFailure)` (see
[fold]).\n */\n @InlineOnly\n @SinceKotlin("1.3")\n public inline fun <R, T : R> Result<T>.getOrElse(onFailure:

```



encapsulated value if this instance represents [success][Result.isSuccess].\n \* Returns the original `Result` unchanged.\n \*/\n@InlineOnly\n@SinceKotlin("1.3")\npublic inline fun <T> Result<T>.onSuccess(action: (value: T) -> Unit): Result<T> {\n contract {\n callsInPlace(action, InvocationKind.AT\_MOST\_ONCE)\n }\n if (isSuccess) action(value as T)\n return this\n}\n\n// -----\n"/\n \* Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n \* Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n \*/\n\npackage kotlin.coroutines\n\nimport kotlin.coroutines.intrinsics.\*\nimport kotlin.internal.InlineOnly\n\n/\*\*\n \* Interface representing a continuation after a suspension point that returns a value of type `T`.\n \*/\n@SinceKotlin("1.3")\npublic interface Continuation<T> {\n /\*\*\n \* The context of the coroutine that corresponds to this continuation.\n \*/\n public val context: CoroutineContext\n /\*\*\n \* Resumes the execution of the corresponding coroutine passing a successful or failed [result] as the\n \* return value of the last suspension point.\n \*/\n public fun resumeWith(result: Result<T>)\n}\n\n/\*\*\n \* Classes and interfaces marked with this annotation are restricted when used as receivers for extension\n \* `suspend` functions. These `suspend` extensions can only invoke other member or extension `suspend` functions on this particular\n \* receiver and are restricted from calling arbitrary suspension functions.\n \*/\n@SinceKotlin("1.3")\n@Target(AnnotationTarget.CLASS)\n@Retention(AnnotationRetention.BINARY)\npublic annotation class RestrictsSuspension\n\n/\*\*\n \* Resumes the execution of the corresponding coroutine passing [value] as the return value of the last suspension point.\n \*/\n@SinceKotlin("1.3")\n@InlineOnly\npublic inline fun <T> Continuation<T>.resume(value: T): Unit =\n resumeWith(Result.success(value))\n\n/\*\*\n \* Resumes the execution of the corresponding coroutine so that the [exception] is re-thrown right after the\n \* last suspension point.\n \*/\n@SinceKotlin("1.3")\n@InlineOnly\npublic inline fun <T> Continuation<T>.resumeWithException(exception: Throwable): Unit =\n resumeWith(Result.failure(exception))\n\n/\*\*\n \* Creates a [Continuation] instance with the given [context] and implementation of [resumeWith] method.\n \*/\n@SinceKotlin("1.3")\n@InlineOnly\npublic inline fun <T> Continuation(\n context: CoroutineContext,\n crossinline resumeWith: (Result<T>) -> Unit): Continuation<T> =\n object : Continuation<T> {\n override val context: CoroutineContext\n get() = context\n\n override fun resumeWith(result: Result<T>) =\n resumeWith(result)\n }\n\n/\*\*\n \* Creates a coroutine without a receiver and with result type [T].\n \* This function creates a new, fresh instance of suspendable computation every time it is invoked.\n \* To start executing the created coroutine, invoke `resume(Unit)` on the returned [Continuation] instance.\n \* The [completion] continuation is invoked when the coroutine completes with a result or an exception.\n \* Subsequent invocation of any resume function on the resulting continuation will produce an [IllegalStateException].\n \*/\n@SinceKotlin("1.3")\n@Suppress("UNCHECKED\_CAST")\npublic fun <T> (suspend () -> T).createCoroutine(\n completion: Continuation<T>): Continuation<Unit> =\n SafeContinuation(createCoroutineUnintercepted(completion).intercepted(), COROUTINE\_SUSPENDED)\n\n/\*\*\n \* Creates a coroutine with receiver type [R] and result type [T].\n \* This function creates a new, fresh instance of suspendable computation every time it is invoked.\n \* To start executing the created coroutine, invoke `resume(Unit)` on the returned [Continuation] instance.\n \* The [completion] continuation is invoked when the coroutine completes with a result or an exception.\n \* Subsequent invocation of any resume function on the resulting continuation will produce an [IllegalStateException].\n \*/\n@SinceKotlin("1.3")\n@Suppress("UNCHECKED\_CAST")\npublic fun <R, T> (suspend R.() -> T).createCoroutine(\n receiver: R,\n completion: Continuation<T>): Continuation<Unit> =\n SafeContinuation(createCoroutineUnintercepted(receiver, completion).intercepted(), COROUTINE\_SUSPENDED)\n\n/\*\*\n \* Starts a coroutine without a receiver and with result type [T].\n \* This function creates and starts a new, fresh instance of suspendable computation every time it is invoked.\n \* The [completion] continuation is invoked when the coroutine completes with a result or an exception.\n \*/\n@SinceKotlin("1.3")\n@Suppress("UNCHECKED\_CAST")\npublic fun <T> (suspend () -> T).startCoroutine(\n completion: Continuation<T>) {\n createCoroutineUnintercepted(completion).intercepted().resume(Unit)\n}\n\n/\*\*\n \* Starts a coroutine with receiver type [R] and result type [T].\n \* This function creates and starts a new, fresh instance of suspendable computation

every time it is invoked.

\* The [completion] continuation is invoked when the coroutine completes with a result or an exception.

```


@SinceKotlin("1.3")
@Suppress("UNCHECKED_CAST")
public fun <R, T> (suspend R.() -> T).startCoroutine(
    receiver: R,
    completion: Continuation<T>) {
    createCoroutineUnintercepted(receiver, completion).intercepted().resume(Unit)
}


```

\* Obtains the current continuation instance inside suspend functions and suspends the currently running coroutine.

\* In this function both [Continuation.resume] and [Continuation.resumeWithException] can be used either synchronously in the same stack-frame where the suspension function is run or asynchronously later in the same thread or from a different thread of execution. Subsequent invocation of any resume function will produce an [IllegalStateException].

```


@SinceKotlin("1.3")
@InlineOnly
public suspend inline fun <T>
suspendCoroutine(crossinline block: (Continuation<T>) -> Unit): T =
    suspendCoroutineUninterceptedOrReturn {
        c: Continuation<T> ->
            val safe = SafeContinuation(c.intercepted())
            block(safe)
        safe.getOrThrow()
    }


```

\* Returns the context of the current coroutine.

```


@SinceKotlin("1.3")
@Suppress("WRONG_MODIFIER_TARGET")
@InlineOnly
public suspend inline
val coroutineContext: CoroutineContext
    get() {
        throw NotImplementedError("Implemented as intrinsic")
    }


```

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```


package kotlin.coroutines.intrinsics
import kotlin.coroutines.*
import kotlin.internal.InlineOnly


```

\* Starts an unintercepted coroutine without a receiver and with result type [T] and executes it until its first suspension.

\* Returns the result of the coroutine or throws its exception if it does not suspend or [COROUTINE\_SUSPENDED] if it suspends.

\* In the latter case, the [completion] continuation is invoked when the coroutine completes with a result or an exception.

\* The coroutine is started directly in the invoker's thread without going through the [ContinuationInterceptor] that might be present in the completion's [CoroutineContext]. It is the invoker's responsibility to ensure that a proper invocation context is established.

\* This function is designed to be used from inside of [suspendCoroutineUninterceptedOrReturn] to resume the execution of the suspended coroutine using a reference to the suspending function.

```


@SinceKotlin("1.3")
@InlineOnly
public actual inline fun <T> (suspend () -> T).startCoroutineUninterceptedOrReturn(
    completion: Continuation<T>): Any? =
    this.asDynamic()(completion, false)


```

\* Starts an unintercepted coroutine with receiver type [R] and result type [T] and executes it until its first suspension.

\* Returns the result of the coroutine or throws its exception if it does not suspend or [COROUTINE\_SUSPENDED] if it suspends.

\* In the latter case, the [completion] continuation is invoked when the coroutine completes with a result or an exception.

\* The coroutine is started directly in the invoker's thread without going through the [ContinuationInterceptor] that might be present in the completion's [CoroutineContext]. It is the invoker's responsibility to ensure that a proper invocation context is established.

\* This function is designed to be used from inside of [suspendCoroutineUninterceptedOrReturn] to resume the execution of the suspended coroutine using a reference to the suspending function.

```


@SinceKotlin("1.3")
@InlineOnly
public actual inline fun <R, T> (suspend R.() -> T).startCoroutineUninterceptedOrReturn(
    receiver: R,
    completion: Continuation<T>): Any? =
    this.asDynamic()(receiver, completion, false)


```

\* Creates unintercepted coroutine without receiver and with result type [T].

\* This function creates a new, fresh instance of suspendable computation every time it is invoked.

\* To start executing the created coroutine, invoke `resume(Unit)` on the returned [Continuation] instance.

\* The [completion] continuation is invoked when coroutine completes with result or exception.

\* This function returns unintercepted continuation.

\* Invocation of `resume(Unit)` starts coroutine immediately in the invoker's call stack without going through the [ContinuationInterceptor] that might be present in the completion's [CoroutineContext].

\* It is the invoker's responsibility to ensure that a proper invocation context is established.

\* Note that [completion] of this function may get invoked in an arbitrary context.

\* [Continuation.intercepted] can be used to acquire the intercepted continuation.

\* Invocation of `resume(Unit)` on intercepted continuation guarantees that execution of both the coroutine and [completion] happens in the invocation context established by [ContinuationInterceptor].

\* Repeated invocation of any resume function

on the resulting continuation corrupts the state machine of the coroutine and may result in arbitrary behaviour or exception.

```

public actual fun <T> (suspend () -> T).createCoroutineUnintercepted(
  completion: Continuation<T>): Continuation<Unit> =
  // Kotlin/JS suspend lambdas have an extra parameter `suspended`
  if (this.asDynamic().length == 2) {
    // When `suspended` is true the continuation is created,
    // but not executed
    this.asDynamic()(completion, true)
  } else {
    createCoroutineFromSuspendFunction(completion) {
      this.asDynamic()(completion)
    }
  }

```

\* Creates unintercepted coroutine with receiver type [R] and result type [T]. \* This function creates a new, fresh instance of suspendable computation every time it is invoked. \* To start executing the created coroutine, invoke `resume(Unit)` on the returned [Continuation] instance. \* The [completion] continuation is invoked when coroutine completes with result or exception. \* This function returns unintercepted continuation. \* Invocation of `resume(Unit)` starts coroutine immediately in the invoker's call stack without going through the [ContinuationInterceptor] that might be present in the completion's [CoroutineContext]. \* It is the invoker's responsibility to ensure that a proper invocation context is established. \* Note that [completion] of this function may get invoked in an arbitrary context. \* [Continuation.intercepted] can be used to acquire the intercepted continuation. \* Invocation of `resume(Unit)` on intercepted continuation guarantees that execution of both the coroutine and [completion] happens in the invocation context established by [ContinuationInterceptor]. \* Repeated invocation of any resume function on the resulting continuation corrupts the state machine of the coroutine and may result in arbitrary behaviour or exception.

```

public actual fun <R, T> (suspend R.() -> T).createCoroutineUnintercepted(
  receiver: R, completion: Continuation<T>):
  Continuation<Unit> =
  // Kotlin/JS suspend lambdas have an extra parameter `suspended`
  if (this.asDynamic().length == 3) {
    // When `suspended` is true the continuation is created, but not executed
    this.asDynamic()(receiver, completion, true)
  } else {
    createCoroutineFromSuspendFunction(completion) {
      this.asDynamic()(receiver, completion)
    }
  }

```

\* Intercepts this continuation with [ContinuationInterceptor]. \* This function shall be used on the immediate result of [createCoroutineUnintercepted] or [suspendCoroutineUninterceptedOrReturn], in which case it checks for [ContinuationInterceptor] in the continuation's [context][Continuation.context], invokes [ContinuationInterceptor.interceptContinuation], caches and returns the result. \* If this function is invoked on other [Continuation] instances it returns `this` continuation unchanged.

```

public actual fun <T> Continuation<T>.intercepted(): Continuation<T> =
  (this as? CoroutineImpl)?.intercepted() ?:
  this

```

```

private inline fun <T> createCoroutineFromSuspendFunction(
  completion: Continuation<T>,
  crossinline block: () -> Any?): Continuation<Unit> {
  @Suppress("UNCHECKED_CAST")
  return object : CoroutineImpl(completion as Continuation<Any?>) {
    override fun doResume(): Any? {
      exception?.let { throw it }
      return block()
    }
  }
}

```

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```

package kotlin.js
// Mirrors signature from JS IR
@JsName("imulEmulated")
internal fun imul(x: Int, y: Int): Int = definedExternally

```

```

internal inline fun isArrayish(o: dynamic) =
  js("Kotlin").isArrayish(o)

```

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```

@file:Suppress("UNUSED_PARAMETER")
package kotlin.js
@kotlin.internal
inline fun jsDeleteProperty(obj: Any, property: Any) {
  js("delete
obj[property]")
}

```

```

@kotlin.internal
inline fun jsBitwiseOr(lhs: Any?, rhs: Any?): Int =
  js("lhs | rhs").unsafeCast<Int>()

```

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```

package kotlin.math

```

\* Returns this value with the sign bit same as of the [sign] value. \* If [sign] is `NaN` the sign of the result is undefined.

```

public actual fun Double.withSign(sign: Double): Double {
  val thisSignBit =
  js("Kotlin").doubleSignBit(this).unsafeCast<Int>()
  val newSignBit =

```

```

js("Kotlin").doubleSignBit(sign).unsafeCast<Int>() return if (thisSignBit == newSignBit) this else -
this}"/** Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors. Use of
this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.
*/
package kotlin
/** Returns a bit representation of the specified floating-point value as [Long] according to the IEEE 754 floating-point "double format" bit layout.
*/
@SinceKotlin("1.2")
@library("doubleToBits")
public actual fun Double.toBits(): Long =
definedExternally
/** Returns a bit representation of the specified floating-point value as [Long] according to the IEEE 754 floating-point "double format" bit layout, preserving `NaN` values exact layout.
*/
@SinceKotlin("1.2")
@library("doubleToRawBits")
public actual fun Double.toRawBits(): Long =
definedExternally
/** Returns the [Double] value corresponding to a given bit representation.
*/
@SinceKotlin("1.2")
@kotlin.internal.InlineOnly
public actual inline fun Double.Companion.fromBits(bits: Long): Double = js("Kotlin").doubleFromBits(bits).unsafeCast<Double>()
/** Returns a bit representation of the specified floating-point value as [Int] according to the IEEE 754 floating-point "single format" bit layout. Note that in Kotlin/JS [Float] range is wider than "single format" bit layout can represent, so some [Float] values may overflow, underflow or lose their accuracy after conversion to bits and back.
*/
@SinceKotlin("1.2")
@library("floatToBits")
public actual fun Float.toBits(): Int =
definedExternally
/** Returns a bit representation of the specified floating-point value as [Int] according to the IEEE 754 floating-point "single format" bit layout, preserving `NaN` values exact layout. Note that in Kotlin/JS [Float] range is wider than "single format" bit layout can represent, so some [Float] values may overflow, underflow or lose their accuracy after conversion to bits and back.
*/
@SinceKotlin("1.2")
@library("floatToRawBits")
public actual fun Float.toRawBits(): Int =
definedExternally
/** Returns the [Float] value corresponding to a given bit representation.
*/
@SinceKotlin("1.2")
@kotlin.internal.InlineOnly
public actual inline fun Float.Companion.fromBits(bits: Int): Float = js("Kotlin").floatFromBits(bits).unsafeCast<Float>()
@kotlin.internal inline fun Long(low: Int, high: Int) = js("Kotlin").Long.fromBits(low, high).unsafeCast<Long>()
@kotlin.internal inline val Long.low: Int get() = this.asDynamic().getLowBits().unsafeCast<Int>()
@kotlin.internal inline val Long.high: Int get() = this.asDynamic().getHighBits().unsafeCast<Int>()
"/** Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors. Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.
*/
package kotlin.text
/** Returns a string representation of this [Long] value in the specified [radix]. @throws IllegalArgumentException when [radix] is not a valid radix for number to string conversion.
*/
@SinceKotlin("1.2")
public actual fun Long.toString(radix: Int): String =
asDynamic().toString(checkRadix(radix))
"/** Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors. Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.
*/
package kotlin.collections
// NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt
// See: https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib
import kotlin.js.*
import kotlin.ranges.contains
import kotlin.ranges.reversed
/** Reverses elements in the list in-place.
*/
public actual fun <T> MutableList<T>.reverse(): Unit {
    val midPoint = (size / 2) - 1
    if (midPoint < 0) return
    var reverseIndex = lastIndex
    for (index in 0..midPoint) {
        val tmp = this[index]
        this[index] = this[reverseIndex]
        this[reverseIndex] = tmp
        reverseIndex--
    }
}
"/** Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors. Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.
*/
package kotlin.text
// NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt
// See: https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib
import kotlin.js.*
/** Returns a character at the given [index] or throws an [IndexOutOfBoundsException] if the [index] is out of bounds of this char sequence.
*/
@sample samples.collections.Collections.elementAt
public actual fun CharSequence.elementAt(index: Int): Char {
    return elementAtOrElse(index) {
        throw IndexOutOfBoundsException("index: $index, length: $length")
    }
}
"/** Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors. Use of this source code is governed by the Apache 2.0

```



license that can be found in the license/LICENSE.txt file.\n \*\n\npackage kotlin.collections\n\n\n// NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt\n// See:

<https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib>\n\n\nimport kotlin.js.\*\nimport

kotlin.ranges.contains\nimport kotlin.ranges.reversed\n\n\n\*\*\n \* Returns an element at the given [index] or throws an [IndexOutOfBoundsException] if the [index] is out of bounds of this array.\n \* \n \* @sample samples.collections.Collections.Elements.elementAt\n

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic actual fun UIntArray.elementAt(index: Int): UInt {\n    return elementAtOrElse(index) { throw IndexOutOfBoundsException("index: $index, size: $size") }\n}\n\n**\n * Returns an element at the given [index] or throws an [IndexOutOfBoundsException] if the [index] is out of bounds of this array.\n * \n * @sample samples.collections.Collections.Elements.elementAt\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic actual fun ULongArray.elementAt(index: Int): ULong {\n    return elementAtOrElse(index) { throw IndexOutOfBoundsException("index: $index, size: $size") }\n}\n\n**\n * Returns an element at the given [index] or throws an [IndexOutOfBoundsException] if the [index] is out of bounds of this array.\n * \n * @sample samples.collections.Collections.Elements.elementAt\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic actual fun UByteArray.elementAt(index: Int): UByte {\n    return elementAtOrElse(index) { throw IndexOutOfBoundsException("index: $index, size: $size") }\n}\n\n**\n * Returns an element at the given [index] or throws an [IndexOutOfBoundsException] if the [index] is out of bounds of this array.\n * \n * @sample samples.collections.Collections.Elements.elementAt\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic actual fun UShortArray.elementAt(index: Int): UShort {\n    return elementAtOrElse(index) { throw IndexOutOfBoundsException("index: $index, size: $size") }\n}\n\n**\n * Returns a [List] that wraps the original array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic actual fun UIntArray.asList(): List<UInt> {\n    return object : AbstractList<UInt>(), RandomAccess {\n        override val size: Int get() = this@asList.size\n        override fun isEmpty(): Boolean = this@asList.isEmpty()\n        override fun contains(element: UInt): Boolean = this@asList.contains(element)\n        override fun get(index: Int): UInt {\n            AbstractList.checkElementIndex(index, size)\n            return this@asList[index]\n        }\n        override fun indexOf(element: UInt): Int {\n            if ((element as Any?) !is UInt) return -1\n            return this@asList.indexOf(element)\n        }\n        override fun lastIndexOf(element: UInt): Int {\n            if ((element as Any?) !is UInt) return -1\n            return this@asList.lastIndexOf(element)\n        }\n    }\n}\n\n**\n * Returns a [List] that wraps the original array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic actual fun ULongArray.asList(): List<ULong> {\n    return object : AbstractList<ULong>(), RandomAccess {\n        override val size: Int get() = this@asList.size\n        override fun isEmpty(): Boolean = this@asList.isEmpty()\n        override fun contains(element: ULong): Boolean = this@asList.contains(element)\n        override fun get(index: Int): ULong {\n            AbstractList.checkElementIndex(index, size)\n            return this@asList[index]\n        }\n        override fun indexOf(element: ULong): Int {\n            if ((element as Any?) !is ULong) return -1\n            return this@asList.indexOf(element)\n        }\n        override fun lastIndexOf(element: ULong): Int {\n            if ((element as Any?) !is ULong) return -1\n            return this@asList.lastIndexOf(element)\n        }\n    }\n}\n\n**\n * Returns a [List] that wraps the original array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic actual fun UByteArray.asList(): List<UByte> {\n    return object : AbstractList<UByte>(), RandomAccess {\n        override val size: Int get() = this@asList.size\n        override fun isEmpty(): Boolean = this@asList.isEmpty()\n        override fun contains(element: UByte): Boolean = this@asList.contains(element)\n        override fun get(index: Int): UByte {\n            AbstractList.checkElementIndex(index, size)\n            return this@asList[index]\n        }\n        override fun indexOf(element: UByte): Int {\n            if ((element as Any?) !is UByte) return -1\n            return this@asList.indexOf(element)\n        }\n        override fun lastIndexOf(element: UByte): Int {\n            if ((element as Any?) !is UByte) return -1\n            return this@asList.lastIndexOf(element)\n        }\n    }\n}\n\n**\n * Returns a [List] that wraps the original array.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic actual fun UShortArray.asList(): List<UShort> {\n    return object : AbstractList<UShort>(), RandomAccess {\n        override val size: Int get() = this@asList.size\n        override fun isEmpty(): Boolean = this@asList.isEmpty()\n
```

```

override fun contains(element: UShort): Boolean = this@asList.contains(element)\n    override fun get(index:
Int): UShort {\n        AbstractList.checkElementIndex(index, size)\n        return this@asList[index]\n    }\n
override fun indexOf(element: UShort): Int {\n        if ((element as Any?) !is UShort) return -1\n        return
this@asList.indexOf(element)\n    }\n    override fun lastIndexOf(element: UShort): Int {\n        if ((element
as Any?) !is UShort) return -1\n        return this@asList.lastIndexOf(element)\n    }\n}\n\n", "@file:
Suppress("DEPRECATION")\npackage jquery.ui\n\n//jquery UI\nimport jquery.JQuery\nimport
kotlin.js.Json\n\n@Deprecated("Use declarations from 'https://bintray.com/kotlin/js-externals/kotlin-js-jquery'
package instead.")\npublic inline fun JQuery.buttonset(): JQuery = asDynamic().buttonset()\n\n@Deprecated("Use
declarations from 'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")\npublic inline fun
JQuery.dialog(): JQuery = asDynamic().dialog()\n\n@Deprecated("Use declarations from
'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")\npublic inline fun JQuery.dialog(params:
Json): JQuery = asDynamic().dialog(params)\n\n@Deprecated("Use declarations from
'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")\npublic inline fun JQuery.dialog(mode:
String, param: String): Any? = asDynamic().dialog(mode, param)\n\n@Deprecated("Use declarations from
'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")\npublic inline fun JQuery.dialog(mode:
String): JQuery = asDynamic().dialog(mode)\n\n@Deprecated("Use declarations from
'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")\npublic inline fun JQuery.dialog(mode:
String, param: String, value: Any?): JQuery = asDynamic().dialog(mode, param, value)\n\n@Deprecated("Use
declarations from 'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")\npublic inline fun
JQuery.button(): JQuery = asDynamic().button()\n\n@Deprecated("Use declarations from
'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")\npublic inline fun JQuery.accordion():
JQuery = asDynamic().accordion()\n\n@Deprecated("Use declarations from 'https://bintray.com/kotlin/js-
externals/kotlin-js-jquery' package instead.")\npublic inline fun JQuery.draggable(params: Json): JQuery =
asDynamic().draggable(params)\n\n@Deprecated("Use declarations from 'https://bintray.com/kotlin/js-
externals/kotlin-js-jquery' package instead.")\npublic inline fun JQuery.selectable(): JQuery =
asDynamic().selectable()\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\npackage kotlin.js\n\nimport
kotlin.annotation.AnnotationTarget.*\n\n@Target(CLASS, FUNCTION, PROPERTY, CONSTRUCTOR,
VALUE_PARAMETER, PROPERTY_GETTER, PROPERTY_SETTER)\n@Deprecated("Use `external` modifier
instead", level = DeprecationLevel.ERROR)\npublic annotation class native(public val name: String =
"")\n\n@Target(FUNCTION)\n@Deprecated("Use inline extension function with body using dynamic")\npublic
annotation class nativeGetter\n\n@Target(FUNCTION)\n@Deprecated("Use inline extension function with body
using dynamic")\npublic annotation class nativeSetter\n\n@Target(FUNCTION)\n@Deprecated("Use inline
extension function with body using dynamic")\npublic annotation class nativeInvoke\n\n@Target(CLASS,
FUNCTION, PROPERTY)\ninternal annotation class library(public val name: String =
"")\n\n@Target(CLASS)\ninternal annotation class marker\n\n/**\n * Gives a declaration (a function, a property or
a class) specific name in JavaScript.\n * This may be useful in the following cases:\n * * There are two
functions for which the compiler gives same name in JavaScript, you can\n *   mark one with `@JsName(...)` to
prevent the compiler from reporting error.\n * * You are writing a JavaScript library in Kotlin. The compiler
produces mangled names\n *   for functions with parameters, which is unnatural for usual JavaScript developer.\n *
You can put `@JsName(...)` on functions you want to be available from JavaScript.\n * * For some reason you
want to rename declaration, e.g. there's common term in JavaScript\n *   for a concept provided by the declaration,
which is uncommon in Kotlin.\n * * Example:\n * * ``` kotlin\n * class Person(val name: String) {\n *   fun
hello() {\n *     println("Hello $name!")\n *   }\n *   @JsName("helloWithGreeting")\n *   fun
hello(greeting: String) {\n *     println("$greeting $name!")\n *   }\n * }\n * * ```\n * * \n * @property name the
name which compiler uses both for declaration itself and for all references to the declaration.\n *   It's required
to denote a valid JavaScript identifier.\n * * \n */\n\n@Retention(AnnotationRetention.BINARY)\n@Target(CLASS,

```

FUNCTION, PROPERTY, CONSTRUCTOR, PROPERTY\_GETTER, PROPERTY\_SETTER)\npublic actual annotation class JsName(actual val name: String)\n\n\*\*\n \* Denotes an `external` declaration that must be imported from native JavaScript library.\n\n \* The compiler produces the code relevant for the target module system, for example, in case of CommonJS,\n\n \* it will import the declaration via the `require(...)` function.\n\n \* The annotation can be used on top-level external declarations (classes, properties, functions) and files.\n\n \* In case of file (which can't be `external`) the following rule applies: all the declarations in\n\n \* the file must be `external`. By applying `@JsModule(...)` on a file you tell the compiler to import a JavaScript object\n\n \* that contain all the declarations from the file.\n\n \* Example:\n\n \* ``` kotlin\n\n \* @JsModule("jquery")\n\n \* external abstract class JQuery() {\n\n \* // some declarations here\n\n \* }\n\n \* @JsModule("jquery")\n\n \* external fun JQuery(element: Element): JQuery\n\n \* ```\n\n \* @property import name of a module to import declaration from.\n\n \* It is not interpreted by the Kotlin compiler, it's passed as is directly to the target module system.\n\n \* @see JsNonModule\n\n \*/\n\n@Retention(AnnotationRetention.BINARY)\n@Target(CLASS, PROPERTY, FUNCTION, FILE)\n\npublic annotation class JsModule(val import: String)\n\n\n\*\*\n \* Denotes an `external` declaration that can be used without module system.\n\n \* By default, an `external` declaration is available regardless your target module system.\n\n \* However, by applying [JsModule] annotation you can make a declaration unavailable to \*plain\* module system.\n\n \* Some JavaScript libraries are distributed both as a standalone downloadable piece of JavaScript and as a module available\n\n \* as an npm package.\n\n \* To tell the Kotlin compiler to accept both cases, you can augment [JsModule] with the `@JsNonModule` annotation.\n\n \* For example:\n\n \* ``` kotlin\n\n \* @JsModule("jquery")\n\n \* @JsNonModule\n\n \* @JsName("\$")\n\n \* external abstract class JQuery() {\n\n \* // some declarations here\n\n \* }\n\n \* @JsModule("jquery")\n\n \* @JsNonModule\n\n \* @JsName("\$")\n\n \* external fun JQuery(element: Element): JQuery\n\n \* ```\n\n \* @see JsModule\n\n \*/\n\n@Retention(AnnotationRetention.BINARY)\n@Target(CLASS, PROPERTY, FUNCTION, FILE)\n\npublic annotation class JsNonModule\n\n\n\*\*\n \* Adds prefix to `external` declarations in a source file.\n\n \* JavaScript does not have concept of packages (namespaces). They are usually emulated by nested objects.\n\n \* The compiler turns references to `external` declarations either to plain unprefixed names (in case of \*plain\* modules)\n\n \* or to plain imports.\n\n \* However, if a JavaScript library provides its declarations in packages, you won't be satisfied with this.\n\n \* You can tell the compiler to generate additional prefix before references to `external` declarations using the `@JsQualifier(...)`\n\n \* annotation.\n\n \* Note that a file marked with the `@JsQualifier(...)` annotation can't contain non-`external` declarations.\n\n \* Example:\n\n \* ```\n\n \* @file:JsQualifier("my.jsPackageName")\n\n \* package some.kotlinPackage\n\n \* external fun foo(x: Int)\n\n \* external fun bar(): String\n\n \* ```\n\n \* @property value the qualifier to add to the declarations in the generated code.\n\n \* It must be a sequence of valid JavaScript identifiers separated by the `.` character.\n\n \* Examples of valid qualifiers are: `foo`, `bar.Baz`, `\_.\$.f`\n\n \* @see JsModule\n\n \*/\n\n@Retention(AnnotationRetention.BINARY)\n@Target(AnnotationTarget.FILE)\n\npublic annotation class JsQualifier(val value: String)\n\n\n\*\*\n \* Marks experimental JS export annotations.\n\n \* Note that behaviour of these annotations will likely be changed in the future.\n\n \* Usages of such annotations will be reported as warnings unless an explicit opt-in with\n\n \* the [OptIn] annotation, e.g. `@OptIn(ExperimentalJsExport::class)`,\n\n \* or with the `-Xopt-in=kotlin.js.ExperimentalJsExport` compiler option is given.\n\n \*/\n\n@Suppress("DEPRECATION")\n@Experimental(level = Experimental.Level.WARNING)\n@RequiresOptIn(level = RequiresOptIn.Level.WARNING)\n@SinceKotlin("1.3")\n\npublic annotation class ExperimentalJsExport\n\n\n\*\*\n \* Exports top-level declaration.\n\n \* Used in future IR-based backend.\n\n \* Has no effect in current JS backend.\n\n \*/\n\n@ExperimentalJsExport\n@SinceKotlin("1.3")\n@Retention(AnnotationRetention.BINARY)\n@Target(CLASS, PROPERTY, FUNCTION, FILE)\n\npublic annotation class JsExport\n\n\n\*\*\n \* Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n\n \* Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n\n \*/\n\npackage kotlin.jvm\n\n// these are used in common generated code in stdlib\n\n// TODO: find how to deprecate these\n\nones\n\n@Target(AnnotationTarget.FIELD)\n@Retention(AnnotationRetention.SOURCE)\n\npublic actual

```

annotation class Volatile\n\n@Target(AnnotationTarget.FUNCTION, AnnotationTarget.PROPERTY_GETTER,
AnnotationTarget.PROPERTY_SETTER)\n@Retention(AnnotationRetention.SOURCE)\npublic actual annotation
class Synchronized\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\npackage kotlin.collections\n\n/**\n * Provides a skeletal implementation of the
[MutableCollection] interface.\n */\n * @param E the type of elements contained in the collection. The collection is
invariant on its element type.\n */\npublic actual abstract class AbstractMutableCollection<E> protected actual
constructor() : AbstractCollection<E>(), MutableCollection<E> {\n\n    actual abstract override fun add(element: E):
Boolean\n\n    actual override fun remove(element: E): Boolean {\n        val iterator = iterator()\n        while
(iterator.hasNext()) {\n            if (iterator.next() == element) {\n                iterator.remove()\n                return true\n
            }\n        }\n        return false\n    }\n\n    actual override fun addAll(elements: Collection<E>): Boolean {\n
var modified = false\n    for (element in elements) {\n        if (add(element)) modified = true\n    }\n    return modified\n
}\n\n    actual override fun removeAll(elements: Collection<E>): Boolean = (this as
MutableIterable<E>).removeAll { it in elements }\n\n    actual override fun retainAll(elements: Collection<E>):
Boolean = (this as MutableIterable<E>).removeAll { it !in elements }\n\n    actual override fun clear(): Unit {\n
val iterator = this.iterator()\n    while (iterator.hasNext()) {\n        iterator.next()\n        iterator.remove()\n
}\n    }\n\n    @JsName("toJSON")\n    open fun toJSON(): Any = this.toArray()\n}\n\n", "/*\n * Copyright 2010-
2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the
Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\n/**\n * Based on GWT AbstractList\n *
Copyright 2007 Google Inc.\n */\n\npackage kotlin.collections\n\n/**\n * Provides a skeletal implementation of
the [MutableList] interface.\n */\n * @param E the type of elements contained in the list. The list is invariant on its
element type.\n */\npublic actual abstract class AbstractMutableList<E> protected actual constructor() :
AbstractMutableCollection<E>(), MutableList<E> {\n    protected var modCount: Int = 0\n\n    abstract override fun
add(index: Int, element: E): Unit\n\n    abstract override fun removeAt(index: Int): E\n\n    abstract override fun
set(index: Int, element: E): E\n\n    /**\n     * Adds the specified element to the end of this list.\n     */\n     * @return
`true` because the list is always modified as the result of this operation.\n     */\n    actual override fun add(element:
E): Boolean {\n        add(size, element)\n        return true\n    }\n\n    actual override fun addAll(index: Int, elements:
Collection<E>): Boolean {\n        var _index = index\n        var changed = false\n        for (e in elements) {\n
add(_index++, e)\n            changed = true\n        }\n        return changed\n    }\n\n    actual override fun clear() {\n
removeRange(0, size)\n    }\n\n    actual override fun removeAll(elements: Collection<E>): Boolean = removeAll {
it in elements }\n\n    actual override fun retainAll(elements: Collection<E>): Boolean = removeAll { it !in elements
}\n\n    actual override fun iterator(): MutableIterator<E> = IteratorImpl()\n\n    actual override fun
contains(element: E): Boolean = indexOf(element) >= 0\n\n    actual override fun indexOf(element: E): Int {\n
for (index in 0..lastIndex) {\n        if (get(index) == element) {\n            return index\n        }\n    }\n    return -1\n
}\n\n    actual override fun lastIndexOf(element: E): Int {\n        for (index in lastIndex downTo 0) {\n
if (get(index) == element) {\n            return index\n        }\n    }\n    return -1\n    }\n\n    actual
override fun listIterator(): MutableListIterator<E> = listIterator(0)\n\n    actual override fun listIterator(index: Int):
MutableListIterator<E> = ListIteratorImpl(index)\n\n    actual override fun subList(fromIndex: Int, toIndex: Int):
MutableList<E> = SubList(this, fromIndex, toIndex)\n\n    /**\n     * Removes the range of elements from this list
starting from [fromIndex] and ending with but not including [toIndex].\n     */\n     */\n    protected open fun
removeRange(fromIndex: Int, toIndex: Int) {\n        val iterator = listIterator(fromIndex)\n        repeat(toIndex -
fromIndex) {\n            iterator.next()\n            iterator.remove()\n        }\n    }\n\n    /**\n     * Compares this list with
another list instance with the ordered structural equality.\n     */\n     * @return true, if [other] instance is a [List] of
the same size, which contains the same elements in the same order.\n     */\n    override fun equals(other: Any?):
Boolean {\n        if (other === this) return true\n        if (other !is List<*>) return false\n\n        return
AbstractList.orderedEquals(this, other)\n    }\n\n    /**\n     * Returns the hash code value for this list.\n     */\n     */\n    override fun hashCode(): Int = AbstractList.orderedHashCode(this)\n\n    private open inner class IteratorImpl :
MutableIterator<E> {\n        /** the index of the item that will be returned on the next call to [next]`()` */\n
}

```

```

protected var index = 0\n    /** the index of the item that was returned on the previous call to [next]()\n    * or [ListIterator.previous]() (for `ListIterator`),\n    * -1 if no such item exists\n    */\n    protected var last = -1\n\n    override fun hasNext(): Boolean = index < size\n\n    override fun next(): E {\n        if (!hasNext())\n            throw NoSuchElementException()\n        last = index++\n        return get(last)\n    }\n\n    override fun remove() {\n        check(last != -1) { \"Call next() or previous() before removing element from the iterator.\" }\n        removeAt(last)\n        index = last\n        last = -1\n    }\n\n    /**\n     * Implementation of `MutableListIterator` for abstract lists.\n     */\n    private inner class ListIteratorImpl(index: Int) : IteratorImpl(),\n        MutableListIterator<E> {\n        init {\n            AbstractList.checkPositionIndex(index,\n                this@AbstractMutableList.size)\n            this.index = index\n        }\n\n        override fun hasPrevious(): Boolean =\n            index > 0\n\n        override fun nextIndex(): Int = index\n\n        override fun previous(): E {\n            if (!hasPrevious())\n                throw NoSuchElementException()\n            last = --index\n            return get(last)\n        }\n\n        override fun previousIndex(): Int = index - 1\n\n        override fun add(element: E) {\n            add(index, element)\n            index++\n            last = -1\n        }\n\n        override fun set(element: E) {\n            check(last != -1) { \"Call\n                next() or previous() before updating element value with the iterator.\" }\n            this@AbstractMutableList[last] =\n                element\n        }\n\n        private class SubList<E>(private val list: AbstractMutableList<E>, private val\n            fromIndex: Int, toIndex: Int) : AbstractMutableList<E>(), RandomAccess {\n            private var _size: Int = 0\n            init {\n                AbstractList.checkRangeIndexes(fromIndex, toIndex, list.size)\n                this._size = toIndex -\n                    fromIndex\n            }\n\n            override fun add(index: Int, element: E) {\n                AbstractList.checkPositionIndex(index, _size)\n                list.add(fromIndex + index, element)\n                _size++\n            }\n\n            override fun get(index: Int): E {\n                AbstractList.checkElementIndex(index, _size)\n                return\n                    list[fromIndex + index]\n            }\n\n            override fun removeAt(index: Int): E {\n                AbstractList.checkElementIndex(index, _size)\n                val result = list.removeAt(fromIndex + index)\n                _size--\n                return result\n            }\n\n            override fun set(index: Int, element: E): E {\n                AbstractList.checkElementIndex(index, _size)\n                return list.set(fromIndex + index, element)\n            }\n\n            override val size: Int get() = _size\n        }\n    }\n\n    /**\n     * Copyright 2010-2018 JetBrains s.r.o. and Kotlin\n     * Programming Language contributors.\n     * Use of this source code is governed by the Apache 2.0 license that can be\n     * found in the license/LICENSE.txt file.\n     */\n\n    /**\n     * Based on GWT AbstractMap\n     * Copyright 2007 Google Inc.\n     */\n\n    /**\n     * Provides a skeletal implementation of the [MutableMap] interface.\n     */\n\n    /**\n     * The implementor is required to implement [entries] property, which should return mutable set of map entries, and\n     * [put] function.\n     */\n\n    /**\n     * @param K the type of map keys. The map is invariant on its key type.\n     */\n\n    /**\n     * @param V the type\n     * of map values. The map is invariant on its value type.\n     */\n\n    /**\n     * public actual abstract class AbstractMutableMap<K, V>\n     * protected actual constructor() : AbstractMap<K, V>(), MutableMap<K, V> {\n     */\n\n    /**\n     * A mutable\n     * [Map.Entry] shared by several [Map] implementations.\n     */\n\n    /**\n     * internal open class SimpleEntry<K, V>(override\n     * val key: K, value: V) : MutableMap.MutableEntry<K, V> {\n     */\n\n    /**\n     * constructor(entry: Map.Entry<K, V>) :\n     * this(entry.key, entry.value)\n     */\n\n    /**\n     * private var _value = value\n     */\n\n    /**\n     * override val value: V get() = _value\n     */\n\n    /**\n     * override fun setValue(newValue: V): V {\n     */\n\n    /**\n     * val oldValue = this._value\n     */\n\n    /**\n     * this._value = newValue\n     */\n\n    /**\n     * return oldValue\n     */\n\n    /**\n     * override fun hashCode(): Int = entryHashCode(this)\n     */\n\n    /**\n     * override fun toString():\n     * String = entryToString(this)\n     */\n\n    /**\n     * override fun equals(other: Any?): Boolean = entryEquals(this, other)\n     */\n\n    /**\n     * actual override fun clear() {\n     */\n\n    /**\n     * entries.clear()\n     */\n\n    /**\n     * private var _keys: MutableSet<K>? = null\n     */\n\n    /**\n     * actual\n     * override val keys: MutableSet<K>\n     */\n\n    /**\n     * get() {\n     */\n\n    /**\n     * if (_keys == null) {\n     */\n\n    /**\n     * _keys = object :\n     * AbstractMutableSet<K>() {\n     */\n\n    /**\n     * override fun add(element: K): Boolean = throw\n     * UnsupportedOperationException(\"Add is not supported on keys\")\n     */\n\n    /**\n     * override fun clear() {\n     */\n\n    /**\n     * this@AbstractMutableMap.clear()\n     */\n\n    /**\n     * override operator fun contains(element: K):\n     * Boolean = containsKey(element)\n     */\n\n    /**\n     * override operator fun iterator(): MutableIterator<K> {\n     */\n\n    /**\n     * val entryIterator = entries.iterator()\n     */\n\n    /**\n     * return object : MutableIterator<K> {\n     */\n\n    /**\n     * override fun hasNext(): Boolean = entryIterator.hasNext()\n     */\n\n    /**\n     * override fun next(): K =\n     * entryIterator.next().key\n     */\n\n    /**\n     * override fun remove() = entryIterator.remove()\n     */\n\n    /**\n     * override fun remove(element: K): Boolean {\n     */\n\n    /**\n     * if (containsKey(element)) {\n     */\n

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        this@AbstractMutableMap.remove(element)\n                return true\n                }\n        return false\n        }\n        override val size: Int get() = this@AbstractMutableMap.size\n    }\n    }\n    return _keys!!\n    }\n    actual abstract override fun put(key: K, value: V): V?\n    actual override fun putAll(from: Map<out K, V>) {\n        for ((key, value) in from) {\n            put(key, value)\n        }\n    }\n    private var _values: MutableCollection<V>? = null\n    actual override val values: MutableCollection<V>\n        get() {\n            if (_values == null) {\n                _values = object : AbstractMutableCollection<V> {\n                    override fun add(element: V): Boolean = throw\n                    UnsupportedOperationException("Add is not supported on values")\n                    override fun clear() = this@AbstractMutableMap.clear()\n                    override operator fun contains(element: V): Boolean = containsValue(element)\n                    override operator fun iterator(): MutableIterator<V> {\n                        val entryIterator = entries.iterator()\n                        return object : MutableIterator<V> {\n                            override fun hasNext(): Boolean = entryIterator.hasNext()\n                            override fun next(): V = entryIterator.next().value\n                            override fun remove() = entryIterator.remove()\n                        }\n                    }\n                }\n            }\n        }\n    override val size: Int get() = this@AbstractMutableMap.size\n    // TODO: should we implement them this way? Currently it's unspecified in JVM\n    override fun equals(other: Any?): Boolean {\n        if (this === other) return true\n        if (other !is Collection<*>) return false\n        return\n        AbstractList.orderedEquals(this, other)\n    }\n    override fun hashCode(): Int = AbstractList.orderedHashCode(this)\n    }\n    }\n    return _values!!\n    }\n    actual override fun remove(key: K): V? {\n        val iter = entries.iterator()\n        while (iter.hasNext()) {\n            val entry = iter.next()\n            val k = entry.key\n            if (key == k) {\n                val value = entry.value\n                iter.remove()\n                return value\n            }\n        }\n        return null\n    }\n}\n\n/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\npackage kotlin.collections\n\n/**\n * Provides a skeletal implementation of the [MutableSet] interface.\n */\n * @param E the type of elements contained in the set. The set is invariant on its element type.\n */\npublic actual abstract class AbstractMutableSet<E>\nprotected actual constructor() : AbstractMutableCollection<E>(), MutableSet<E> {\n    /**\n     * Compares this set with another set instance with the unordered structural equality.\n     */\n     * @return `true`, if [other] instance is a [Set] of the same size, all elements of which are contained in this set.\n     */\n    override fun equals(other: Any?): Boolean {\n        if (other === this) return true\n        if (other !is Set<*>) return false\n        return\n        AbstractSet.setEquals(this, other)\n    }\n    /**\n     * Returns the hash code value for this set.\n     */\n    override fun hashCode(): Int = AbstractSet.unorderedHashCode(this)\n}\n\n/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\npackage kotlin.collections\n\n/**\n * Provides a [MutableList] implementation, which uses a resizable array as its backing storage.\n */\n * This implementation doesn't provide a way to manage capacity, as backing JS array is resizable itself.\n * There is no speed advantage to pre-allocating array sizes in JavaScript, so this implementation does not include any of the\n * capacity and \"growth increment\" concepts.\n */\npublic actual open class ArrayList<E> internal constructor(private var array: Array<Any?>) : AbstractMutableList<E>(), MutableList<E>, RandomAccess {\n    /**\n     * Creates an empty [ArrayList].\n     */\n    public actual constructor() : this(emptyArray()) {\n        /**\n         * Creates an empty [ArrayList].\n         */\n        @param initialCapacity initial capacity (ignored)\n        */\n        @Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\n        public actual constructor(initialCapacity: Int = 0) : this(emptyArray()) {\n            /**\n             * Creates an [ArrayList] filled from the [elements] collection.\n             */\n            public actual constructor(elements: Collection<E>) : this(elements.toArray<Any?>()) {\n                /**\n                 * Does nothing in this ArrayList implementation.\n                 */\n                public actual fun trimToSize() {\n                    /**\n                     * Does nothing in this ArrayList implementation.\n                     */\n                    public actual fun ensureCapacity(minCapacity: Int) {\n                        actual override val size: Int get() = array.size\n                    }\n                    @Suppress("UNCHECKED_CAST")\n                    actual override fun get(index: Int): E = array[rangeCheck(index)] as E\n                    actual override fun set(index: Int, element: E): E {\n                        rangeCheck(index)\n                    }\n                }\n            }\n        }\n    }\n}

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@Suppress("UNCHECKED_CAST")\n    return array[index].apply { array[index] = element } as E\n    }\n\nactual override fun add(element: E): Boolean {\n    array.asDynamic().push(element)\n    modCount++\n    return true\n    }\n\nactual override fun add(index: Int, element: E): Unit {\n    array.asDynamic().splice(insertionRangeCheck(index), 0, element)\n    modCount++\n    }\n\nactual override fun addAll(elements: Collection<E>): Boolean {\n    if (elements.isEmpty()) return false\n    array += elements.toArray<Any?>()\n    modCount++\n    return true\n    }\n\nactual override fun addAll(index: Int, elements: Collection<E>): Boolean {\n    insertionRangeCheck(index)\n    if (index == size) return addAll(elements)\n    if (elements.isEmpty()) return false\n    when (index) {\n        size -> return addAll(elements)\n        0 -> array = elements.toArray<Any?>() + array\n        else -> array = array.copyOfRange(0, index).asDynamic().concat(elements.toArray<Any?>(), array.copyOfRange(index, size))\n    }\n    modCount++\n    return true\n    }\n\nactual override fun removeAt(index: Int): E {\n    rangeCheck(index)\n    modCount++\n    return if (index == lastIndex)\n        array.asDynamic().pop()\n    else\n        array.asDynamic().splice(index, 1)[0]\n    }\n\nactual override fun remove(element: E): Boolean {\n    for (index in array.indices) {\n        if (array[index] == element) {\n            array.asDynamic().splice(index, 1)\n            modCount++\n            return true\n        }\n    }\n    return false\n    }\n\noverride fun removeRange(fromIndex: Int, toIndex: Int) {\n    modCount++\n    array.asDynamic().splice(fromIndex, toIndex - fromIndex)\n    }\n\nactual override fun clear() {\n    array = emptyArray()\n    modCount++\n    }\n\nactual override fun indexOf(element: E): Int = array.indexOf(element)\n\nactual override fun lastIndexOf(element: E): Int = array.lastIndexOf(element)\n\noverride fun toString() = arrayToString(array)\n\noverride fun toArray(): Array<Any?> = js("{}").slice.call(array)\n\nprivate fun rangeCheck(index: Int) = index.apply {\n    AbstractList.checkElementIndex(index, size)\n    }\n\nprivate fun insertionRangeCheck(index: Int) = index.apply {\n    AbstractList.checkPositionIndex(index, size)\n    }\n}"/*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.collections\n\ninternal fun <T> sortArrayWith(array: Array<out T>, comparison: (T, T) -> Int) {\n    if (getStableSortingIsSupported()) {\n        array.asDynamic().sort(comparison)\n    } else {\n        mergeSort(array.unsafeCast<Array<T>>(), 0, array.lastIndex, Comparator(comparison))\n    }\n}\n\ninternal fun <T> sortArrayWith(array: Array<out T>, comparator: Comparator<in T>) {\n    if (getStableSortingIsSupported()) {\n        val comparison = { a: T, b: T -> comparator.compare(a, b) }\n        array.asDynamic().sort(comparison)\n    } else {\n        mergeSort(array.unsafeCast<Array<T>>(), 0, array.lastIndex, comparator)\n    }\n}\n\ninternal fun <T : Comparable<T>> sortArray(array: Array<out T>) {\n    if (getStableSortingIsSupported()) {\n        val comparison = { a: T, b: T -> a.compareTo(b) }\n        array.asDynamic().sort(comparison)\n    } else {\n        mergeSort(array.unsafeCast<Array<T>>(), 0, array.lastIndex, naturalOrder())\n    }\n}\n\nprivate var _stableSortingIsSupported: Boolean? = null\n\nprivate fun getStableSortingIsSupported(): Boolean {\n    _stableSortingIsSupported?.let { return it }\n    _stableSortingIsSupported = false\n\n    val array = js("{}").unsafeCast<Array<Int>>()\n    // known implementations may use stable sort for arrays of up to 512 elements\n    // so we create slightly more elements to test stability\n    for (index in 0 until 600)\n        array.asDynamic().push(index)\n    val comparison = { a: Int, b: Int -> (a and 3) - (b and 3) }\n    array.asDynamic().sort(comparison)\n    for (index in 1 until array.size) {\n        val a = array[index - 1]\n        val b = array[index]\n        if ((a and 3) == (b and 3) && a >= b) return false\n    }\n    _stableSortingIsSupported = true\n    return true\n}\n\nprivate fun <T> mergeSort(array: Array<T>, start: Int, endInclusive: Int, comparator: Comparator<in T>) {\n    val buffer = arrayOfNulls<Any?>(array.size).unsafeCast<Array<T>>()\n    val result = mergeSort(array, buffer, start, endInclusive, comparator)\n    if (result !== array) {\n        result.forEachIndexed { i, v -> array[i] = v }\n    }\n}\n\n// Both start and end are inclusive indices.\nprivate fun <T> mergeSort(array: Array<T>, buffer: Array<T>, start: Int, end: Int, comparator: Comparator<in T>): Array<T> {\n    if (start == end) {\n        return array\n    }\n    val median = (start + end) / 2\n    val left = mergeSort(array, buffer, start, median, comparator)\n    val right = mergeSort(array, buffer, median + 1, end, comparator)\n    val target = if (left === buffer) array else buffer\n    // Merge.\n    var leftIndex = start\n    var rightIndex = median + 1\n    for (i in

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start..end) {\n    when {\n        leftIndex <= median && rightIndex <= end -> {\n            val leftValue =
left[leftIndex]\n            val rightValue = right[rightIndex]\n            if (comparator.compare(leftValue,
rightValue) <= 0) {\n                target[i] = leftValue\n                leftIndex++\n            } else {\n
target[i] = rightValue\n                rightIndex++\n            }\n            leftIndex <= median -> {\n
target[i] = left[leftIndex]\n                leftIndex++\n            }\n            else /* rightIndex <= end */ -> {\n
target[i] = right[rightIndex]\n                rightIndex++\n                Unit // TODO: Fix KT-31506\n            }\n        }\n    }\n    return target\n}", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\npackage
kotlin.collections\n\n@UseExperimental(ExperimentalUnsignedTypes::class)\n@SinceKotlin("1.3")\n@kotlin.js
.JsName("contentDeepHashCodeImpl")\ninternal fun <T> Array<out T>.contentDeepHashCodeImpl(): Int {\n
var result = 1\n    for (element in this) {\n        val elementHash = when {\n            element == null -> 0\n
isArrayish(element) -> (element.unsafeCast<Array<*>>()).contentDeepHashCodeImpl()\n            element is
UByteArray -> element.contentHashCode()\n            element is UShortArray -> element.contentHashCode()\n
            element is UIntArray -> element.contentHashCode()\n            element is ULongArray ->
element.contentHashCode()\n            else -> element.hashCode()\n        }\n        result = 31 * result +
elementHash\n    }\n    return result\n}", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming
Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\npackage kotlin.collections\n\ninternal interface EqualityComparator {\n    /**\n
* Subclasses must override to return a value indicating\n    * whether or not two keys or values are equal.\n    */\n
abstract fun equals(value1: Any?, value2: Any?): Boolean\n\n    /**\n
* Subclasses must override to return the
hash code of a given key.\n    */\n    abstract fun getHashCode(value: Any?): Int\n\n    object HashCode :
EqualityComparator {\n        override fun equals(value1: Any?, value2: Any?): Boolean = value1 == value2\n
        override fun getHashCode(value: Any?): Int = value?.hashCode() ?: 0\n    }\n}", "/*\n * Copyright 2010-2018
JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the
Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\n/*\n * Based on GWT
AbstractHashMap\n * Copyright 2008 Google Inc.\n */\n\npackage kotlin.collections\n\nimport
kotlin.collections.MutableMap.MutableEntry\n\n/**\n
* Hash table based implementation of the [MutableMap]
interface.\n * This implementation makes no guarantees regarding the order of enumeration of [keys], [values]
and [entries] collections.\n */\n\npublic actual open class HashMap<K, V> : AbstractMutableMap<K, V>,
MutableMap<K, V> {\n\n    private inner class EntrySet : AbstractMutableSet<MutableEntry<K, V>>() {\n\n
        override fun add(element: MutableEntry<K, V>): Boolean = throw UnsupportedOperationException("Add is not
supported on entries")\n        override fun clear() {\n            this@HashMap.clear()\n        }\n        override
operator fun contains(element: MutableEntry<K, V>): Boolean = containsEntry(element)\n        override operator
fun iterator(): MutableIterator<MutableEntry<K, V>> = internalMap.iterator()\n        override fun
remove(element: MutableEntry<K, V>): Boolean {\n            if (contains(element)) {\n
this@HashMap.remove(element.key)\n                return true\n            }\n            return false\n        }\n        override
val size: Int get() = this@HashMap.size\n    }\n\n    /**\n
* Internal implementation of the map: either string-
based or hashcode-based.\n    */\n    private val internalMap: InternalMap<K, V>\n    private val equality:
EqualityComparator\n\n    internal constructor(internalMap: InternalMap<K, V>) : super() {\n        this.internalMap
= internalMap\n        this.equality = internalMap.equality\n    }\n\n    /**\n
* Constructs an empty [HashMap]
instance.\n    */\n    actual constructor() : this(InternalHashMap(EqualityComparator.HashCode))\n\n    /**\n
* Constructs an empty [HashMap] instance.\n    * @param initialCapacity the initial capacity (ignored)\n
* @param loadFactor the load factor (ignored)\n    * @throws IllegalArgumentException if the initial
capacity or load factor are negative\n    */\n
@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\n    actual constructor(initialCapacity:
Int, loadFactor: Float = 0.0f) : this() {\n        // This implementation of HashMap has no need of load factors or
capacities.\n        require(initialCapacity >= 0) { "Negative initial capacity: $initialCapacity" }\n    }

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require(loadFactor >= 0) { \"Non-positive load factor: $loadFactor\" }\n }\n\n actual constructor(initialCapacity:
Int) : this(initialCapacity, 0.0f)\n\n /**\n * Constructs an instance of [HashMap] filled with the contents of the
specified [original] map.\n *^\n actual constructor(original: Map<out K, V>) : this() {\n
this.putAll(original)\n }\n\n actual override fun clear() {\n internalMap.clear()\n//
structureChanged(this)\n }\n\n actual override fun containsKey(key: K): Boolean =
internalMap.containsKey(key)\n\n actual override fun containsValue(value: V): Boolean = internalMap.any {
equality.equals(it.value, value) }\n\n private var _entries: MutableSet<MutableMap.MutableEntry<K, V>>? =
null\n actual override val entries: MutableSet<MutableMap.MutableEntry<K, V>>\n get() {\n if
(_entries == null) {\n _entries = createEntrySet()\n }\n return _entries!!\n }\n\n
protected open fun createEntrySet(): MutableSet<MutableMap.MutableEntry<K, V>> = EntrySet()\n\n actual
override operator fun get(key: K): V? = internalMap.get(key)\n\n actual override fun put(key: K, value: V): V? =
internalMap.put(key, value)\n\n actual override fun remove(key: K): V? = internalMap.remove(key)\n\n actual
override val size: Int get() = internalMap.size\n\n}\n\n/**\n * Constructs the specialized implementation of
[HashMap] with [String] keys, which stores the keys as properties of\n * JS object without hashing them.\n
*^\npublic fun <V> stringMapOf(vararg pairs: Pair<String, V>): HashMap<String, V> {\n return
HashMap<String, V>(InternalStringMap(EqualityComparator.HashCode)).apply { putAll(pairs) }\n}\n\n\"/*\n *
Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is
governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n *^\n/*\n * Based on GWT
HashSet\n * Copyright 2008 Google Inc.\n *^\n\npackage kotlin.collections\n\n/**\n * The implementation of the
[MutableSet] interface, backed by a [HashMap] instance.\n *^\npublic actual open class HashSet<E> :
AbstractMutableSet<E>, MutableSet<E> {\n\n private val map: HashMap<E, Any>\n\n /**\n * Constructs a
new empty [HashSet].\n *^\n actual constructor() {\n map = HashMap<E, Any>()\n }\n\n /**\n *
Constructs a new [HashSet] filled with the elements of the specified collection.\n *^\n actual
constructor(elements: Collection<E>) {\n map = HashMap<E, Any>(elements.size)\n addAll(elements)\n
}\n\n /**\n * Constructs a new empty [HashSet].\n *^\n * @param initialCapacity the initial capacity
(ignored)\n * @param loadFactor the load factor (ignored)\n *^\n * @throws IllegalArgumentException if
the initial capacity or load factor are negative\n *^\n
@Suppress(\"ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS\")\n actual constructor(initialCapacity:
Int, loadFactor: Float = 0.0f) {\n map = HashMap<E, Any>(initialCapacity, loadFactor)\n }\n\n actual
constructor(initialCapacity: Int) : this(initialCapacity, 0.0f)\n\n /**\n * Protected constructor to specify the
underlying map. This is used by\n * LinkedHashSet.\n *^\n * @param map underlying map to use.\n *^\n
internal constructor(map: HashMap<E, Any>) {\n this.map = map\n }\n\n actual override fun add(element:
E): Boolean {\n val old = map.put(element, this)\n return old == null\n }\n\n actual override fun clear()
{\n map.clear()\n }\n\n// public override fun clone(): Any {\n// return HashSet<E>(this)\n// }\n\n
actual override operator fun contains(element: E): Boolean = map.containsKey(element)\n\n actual override fun
isEmpty(): Boolean = map.isEmpty()\n\n actual override fun iterator(): MutableIterator<E> =
map.keys.iterator()\n\n actual override fun remove(element: E): Boolean = map.remove(element) != null\n\n
actual override val size: Int get() = map.size\n\n}\n\n/**\n * Creates a new instance of the specialized
implementation of [HashSet] with the specified [String] elements,\n * which elements the keys as properties of JS
object without hashing them.\n *^\npublic fun stringSetOf(vararg elements: String): HashSet<String> {\n return
HashSet(stringMapOf<Any>()).apply { addAll(elements) }\n}\n\n\"/*\n * Copyright 2010-2018 JetBrains s.r.o. and
Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that
can be found in the license/LICENSE.txt file.\n *^\n/*\n * Based on GWT InternalHashCodeMap\n * Copyright
2008 Google Inc.\n *^\n\npackage kotlin.collections\n\nimport
kotlin.collections.MutableMap.MutableEntry\nimport kotlin.collections.AbstractMutableMap.SimpleEntry\n\n/**\n
* A simple wrapper around JavaScriptObject to provide [java.util.Map]-like semantics for any\n * key type.\n *^\n
*^\n * Implementation notes:\n *^\n * A key's hashCode is the index in backingMap which should contain that
key. Since several keys may\n * have the same hash, each value in hashCodeMap is actually an array containing all

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entries whose\n * keys share the same hash.\n */\ninternal class InternalHashMap<K, V>(override val equality:
EqualityComparator) : InternalMap<K, V> {\n\n    private var backingMap: dynamic = createJsMap()\n    override
var size: Int = 0\n    private set\n\n    override fun put(key: K, value: V): V? {\n        val hashCode =
equality.getHashCode(key)\n        val chainOrEntry = getChainOrEntryOrNull(hashCode)\n        if (chainOrEntry
== null) {\n            // This is a new chain, put it to the map.\n            backingMap[hashCode] = SimpleEntry(key,
value)\n        } else {\n            if (chainOrEntry !is Array<*>) {\n                // It is an entry\n                val entry:
SimpleEntry<K, V> = chainOrEntry\n                if (equality.equals(entry.key, key)) {\n                    return
entry.setValue(value)\n                } else {\n                    backingMap[hashCode] = arrayOf(entry, SimpleEntry(key,
value))\n                    size++\n                    return null\n                }\n            } else {\n                // Chain already
exists, perhaps key also exists.\n                val chain: Array<MutableEntry<K, V>> = chainOrEntry\n                val
entry = chain.findEntryInChain(key)\n                if (entry != null) {\n                    return entry.setValue(value)\n                }\n                chain.asDynamic().push(SimpleEntry(key, value))\n            }\n            size++\n\n            // structure changed\n            return null\n        }\n\n        override fun remove(key: K): V? {\n            val hashCode =
equality.getHashCode(key)\n            val chainOrEntry = getChainOrEntryOrNull(hashCode) ?: return null\n            if
(chainOrEntry !is Array<*>) {\n                val entry: MutableEntry<K, V> = chainOrEntry\n                if
(equality.equals(entry.key, key)) {\n                    jsDeleteProperty(backingMap, hashCode)\n                    size--\n                    return entry.value\n                } else {\n                    return null\n                }\n            } else {\n                val chain:
Array<MutableEntry<K, V>> = chainOrEntry\n                for (index in chain.indices) {\n                    val entry =
chain[index]\n                    if (equality.equals(key, entry.key)) {\n                        if (chain.size == 1) {\n                            chain.asDynamic().length = 0\n                            // remove the whole array\n                            jsDeleteProperty(backingMap, hashCode)\n                        } else {\n                            // splice out the entry we're
removing\n                            chain.asDynamic().splice(index, 1)\n                            size--\n                        }\n                        structureChanged(host)\n                        return entry.value\n                    }\n                }\n                return null\n            }\n\n            override fun clear() {\n                backingMap = createJsMap()\n                size = 0\n            }\n\n            override fun contains(key: K):
Boolean = getEntry(key) != null\n\n            override fun get(key: K): V? = getEntry(key)?.value\n\n            private fun
getEntry(key: K): MutableEntry<K, V>? {\n                val chainOrEntry =
getChainOrEntryOrNull(equality.getHashCode(key)) ?: return null\n                if (chainOrEntry !is Array<*>) {\n                    val entry: MutableEntry<K, V> = chainOrEntry\n                    if (equality.equals(entry.key, key)) {\n                        return
entry\n                    } else {\n                        return null\n                    }\n                } else {\n                    val chain: Array<MutableEntry<K,
V>> = chainOrEntry\n                    return chain.findEntryInChain(key)\n                }\n            }\n\n            private fun
Array<MutableEntry<K, V>>.findEntryInChain(key: K): MutableEntry<K, V>? =\n                firstOrNull { entry ->
equality.equals(entry.key, key) }\n\n            override fun iterator(): MutableIterator<MutableEntry<K, V>> {\n                return object : MutableIterator<MutableEntry<K, V>> {\n                    var state = -1 // -1 not ready, 0 - ready, 1 -
done\n                    val keys: Array<String> = js("Object").keys(backingMap)\n                    var keyIndex = -1\n                    var chainOrEntry: dynamic = null\n                    var isChain = false\n                    var itemIndex = -1\n                    var lastEntry:
MutableEntry<K, V>? = null\n\n                    private fun computeNext(): Int {\n                        if (chainOrEntry != null &&
isChain) {\n                            val chainSize: Int = chainOrEntry.unsafeCast<Array<MutableEntry<K, V>>>().size\n                            if (++itemIndex < chainSize)\n                                return 0\n                        }\n                        if (++keyIndex < keys.size)\n                            {\n                                chainOrEntry = backingMap[keys[keyIndex]]\n                                isChain = chainOrEntry is Array<*>\n                                itemIndex = 0\n                                return 0\n                            } else {\n                                chainOrEntry = null\n                                return 1\n                            }\n                        }\n\n                        override fun hasNext(): Boolean {\n                            if (state == -1)\n                                state = computeNext()\n                            return state == 0\n                        }\n\n                        override fun next(): MutableEntry<K, V> {\n                            if (!hasNext()) throw NoSuchElementException()\n                            val lastEntry = if (isChain) {\n                                chainOrEntry.unsafeCast<Array<MutableEntry<K, V>>>()[itemIndex]\n                            } else {\n                                chainOrEntry.unsafeCast<MutableEntry<K, V>>()\n                            }\n                            this.lastEntry = lastEntry\n                            state = -1\n                            return lastEntry\n                        }\n\n                        override fun remove() {\n                            checkNotNull(lastEntry)\n                            this@InternalHashMap.remove(lastEntry!!.key)\n                            lastEntry =
null\n                            // the chain being iterated just got modified by InternalHashMap.remove\n                            itemIndex-

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-}\n    }\n    }\n\n private fun getChainOrEntryOrNull(hashCode: Int): dynamic {\n    val
chainOrEntry = backingMap[hashCode]\n    return if (chainOrEntry === undefined) null else chainOrEntry\n
}\n}\n}\n", /*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of
this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*\n\npackage kotlin.collections\n\n/**\n * The common interface of [InternalStringMap] and
[InternalHashMap].\n *\ninternal interface InternalMap<K, V> :
MutableIterable<MutableMap.MutableEntry<K, V>> {\n    val equality: EqualityComparator\n    val size: Int\n
operator fun contains(key: K): Boolean\n    operator fun get(key: K): V?\n\n    fun put(key: K, value: V): V?\n
fun remove(key: K): V?\n    fun clear(): Unit\n\n    fun createJsMap(): dynamic {\n        val result =
js("Object.create(null)")\n        // force to switch object representation to dictionary mode\n        result["foo"] =
1\n        jsDeleteProperty(result, "foo")\n        return result\n    }\n}\n}\n", /*\n * Copyright 2010-2018 JetBrains s.r.o.
and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license
that can be found in the license/LICENSE.txt file.\n *\n*\n * Based on GWT InternalStringMap\n * Copyright
2008 Google Inc.\n *\npackage kotlin.collections\n\nimport kotlin.collections.MutableMap.MutableEntry\n\n/**\n * A simple wrapper around JavaScript Map for key type is string.\n *\n * Though this map is instantiated only with
K=String, the K type is not fixed to String statically,\n * because we want to have it erased to Any? in order not to
generate type-safe override bridges for\n * [get], [contains], [remove] etc, if they ever are generated.\n *\ninternal
class InternalStringMap<K, V>(override val equality: EqualityComparator) : InternalMap<K, V> {\n\n    private var
backingMap: dynamic = createJsMap()\n    override var size: Int = 0\n    private set\n\n    /**\n     * A mod
count to track 'value' replacements in map to ensure that the 'value' that we have in the\n     * iterator entry is
guaranteed to be still correct.\n     * This is to optimize for the common scenario where the values are not modified
during\n     * iterations where the entries are never stale.\n     */\n    private var valueMod: Int = 0\n    override
operator fun contains(key: K): Boolean {\n        if (key !is String) return false\n        return backingMap[key] !==
undefined\n    }\n\n    override operator fun get(key: K): V? {\n        if (key !is String) return null\n        val value =
backingMap[key]\n        return if (value !== undefined) value.unsafeCast<V>() else null\n    }\n\n    override fun
put(key: K, value: V): V? {\n        require(key is String)\n        val oldValue = backingMap[key]\n        backingMap[key] = value\n\n        if (oldValue === undefined) {\n            size++\n\n            structureChanged(host)\n            return null\n        } else {\n            valueMod++\n            return
oldValue.unsafeCast<V>()\n        }\n    }\n\n    override fun remove(key: K): V? {\n        if (key !is String) return
null\n        val value = backingMap[key]\n        if (value !== undefined) {\n            jsDeleteProperty(backingMap,
key)\n            size--\n\n            structureChanged(host)\n            return value.unsafeCast<V>()\n        } else {\n            valueMod++\n            return null\n        }\n    }\n\n    override fun clear() {\n        backingMap = createJsMap()\n        size = 0\n    }\n\n    override fun iterator(): MutableIterator<MutableEntry<K, V>> {\n        return object :
MutableIterator<MutableEntry<K, V>> {\n            private val keys: Array<String> =
js("Object").keys(backingMap)\n            private val iterator = keys.iterator()\n            private var lastKey: String? =
null\n\n            override fun hasNext(): Boolean = iterator.hasNext()\n\n            override fun next():
MutableEntry<K, V> {\n                val key = iterator.next()\n                lastKey = key\n                @Suppress("UNCHECKED_CAST")\n                return newMapEntry(key as K)\n            }\n\n            override
fun remove() {\n                @Suppress("UNCHECKED_CAST")\n                this@InternalStringMap.remove(checkNotNull(lastKey) as K)\n            }\n        }\n\n        private fun
newMapEntry(key: K): MutableEntry<K, V> = object : MutableEntry<K, V> {\n            override val key: K get() =
key\n            override val value: V get() = this@InternalStringMap[key].unsafeCast<V>()\n\n            override fun
setValue(newValue: V): V = this@InternalStringMap.put(key, newValue).unsafeCast<V>()\n\n            override fun
hashCode(): Int = AbstractMap.entryHashCode(this)\n            override fun toString(): String =
AbstractMap.entryToString(this)\n            override fun equals(other: Any?): Boolean = AbstractMap.entryEquals(this,
other)\n        }\n    }\n}\n}\n", /*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n *
Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*\n*\n * Based on GWT LinkedHashMap\n * Copyright 2008 Google Inc.\n *\npackage

```

```

kotlin.collections\n\nimport kotlin.collections.MutableMap.MutableEntry\n\n/**\n * Hash table based
implementation of the [MutableMap] interface, which additionally preserves the insertion order\n * of entries during
the iteration.\n *\n * The insertion order is preserved by maintaining a doubly-linked list of all of its entries.\n
*/\n\npublic actual open class LinkedHashMap<K, V> : HashMap<K, V>, MutableMap<K, V> {\n\n    /**\n     * The
entry we use includes next/prev pointers for a doubly-linked circular\n     * list with a head node. This reduces the
special cases we have to deal with\n     * in the list operations.\n     *\n     * Note that we duplicate the key from the
underlying hash map so we can find\n     * the eldest entry. The alternative would have been to modify HashMap so
more\n     * of the code was directly usable here, but this would have added some\n     * overhead to HashMap, or to
reimplement most of the HashMap code here with\n     * small modifications. Paying a small storage cost only if
you use\n     * LinkedHashMap and minimizing code size seemed like a better tradeoff\n     */\n     private class
ChainEntry<K, V>(key: K, value: V) : AbstractMutableMap.SimpleEntry<K, V>(key, value) {\n         internal var
next: ChainEntry<K, V>? = null\n         internal var prev: ChainEntry<K, V>? = null\n     }\n     private inner class
EntrySet : AbstractMutableSet<MutableEntry<K, V>>() {\n         private inner class EntryIterator :
MutableIterator<MutableEntry<K, V>> {\n             // The last entry that was returned from this iterator.\n
private var last: ChainEntry<K, V>? = null\n             // The next entry to return from this iterator.\n             private
var next: ChainEntry<K, V>? = null\n             init {\n                 next = head\n            }\n            recordLastKnownStructure(map, this)\n            override fun hasNext(): Boolean {\n                return
next != null\n            }\n            override fun next(): MutableEntry<K, V> {\n                checkStructuralChange(map, this)\n                if (!hasNext()) throw NoSuchElementException()\n                val
current = next!!\n                last = current\n                next = current.next.takeIf { it != head }\n                return
current\n            }\n            override fun remove() {\n                check(last != null)\n            }\n            checkStructuralChange(map, this)\n            last!!.remove()\n            map.remove(last!!.key)\n            recordLastKnownStructure(map, this)\n            last = null\n        }\n        override fun add(element:
MutableEntry<K, V>): Boolean = throw UnsupportedOperationException("Add is not supported on entries")\n        override fun clear() {\n            this@LinkedHashMap.clear()\n        }\n        override operator fun
contains(element: MutableEntry<K, V>): Boolean = containsEntry(element)\n        override operator fun iterator():
MutableIterator<MutableEntry<K, V>> = EntryIterator()\n        override fun remove(element: MutableEntry<K,
V>): Boolean {\n            if (contains(element)) {\n                this@LinkedHashMap.remove(element.key)\n            }\n            return true\n        }\n        return false\n    }\n    override val size: Int get() = this@LinkedHashMap.size\n
}\n\n    /**\n     * The head of the insert order chain, which is a doubly-linked circular\n     * list.\n     *\n     * The most
recently inserted node is at the end of the chain, ie.\n     * chain.prev.\n     */\n     private var head: ChainEntry<K, V>?
= null\n\n    /**\n     * Add this node to the end of the chain.\n     */\n     private fun ChainEntry<K, V>.addToEnd()\n    {\n        // This entry is not in the list.\n        check(next == null && prev == null)\n        val _head = head\n        if
(_head == null) {\n            head = this\n            next = this\n            prev = this\n        } else {\n            // Chain is
valid.\n            val _tail = checkNotNull(_head.prev)\n            // Update me.\n            prev = _tail\n            next =
_head\n            // Update my new siblings: current head and old tail\n            _head.prev = this\n            _tail.next =
this\n        }\n    }\n\n    /**\n     * Remove this node from the chain it is a part of.\n     */\n     private fun
ChainEntry<K, V>.remove() {\n        if (this.next === this) {\n            // if this is single element, remove head\n
            head = null\n        } else {\n            if (head === this) {\n                // if this is first element, move head to next\n
                head = next\n            }\n            next!!.prev = prev\n            prev!!.next = next\n        }\n        next = null\n        prev = null\n    }\n\n    /**\n     * The hashmap that keeps track of our entries and the chain. Note that we\n     *
duplicate the key here to eliminate changes to HashMap and minimize the\n     * code here, at the expense of
additional space.\n     */\n     private val map: HashMap<K, ChainEntry<K, V>>\n\n    /**\n     * Constructs an empty
[LinkedHashMap] instance.\n     */\n     actual constructor() : super() {\n        map = HashMap<K, ChainEntry<K,
V>>()\n    }\n\n     internal constructor(backingMap: HashMap<K, Any>) : super() {\n        @Suppress("UNCHECKED_CAST") // expected to work due to erasure\n        map = backingMap as
HashMap<K, ChainEntry<K, V>>\n    }\n\n    /**\n     * Constructs an empty [LinkedHashMap] instance.\n     *\n     * @param initialCapacity the initial capacity (ignored)\n     * @param loadFactor the load factor (ignored)\n

```



```

can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.io\n\ninternal abstract class BaseOutput {\n
open fun println() {\n    print("\n")\n } \n\n open fun println(message: Any?) {\n    print(message)\n
println()\n } \n\n abstract fun print(message: Any?)\n\n open fun flush() { }\n\n/** JsName used to make the
declaration available outside of module to test it */\n\n@JsName("NodeJsOutput")\n\ninternal class NodeJsOutput(val
outputStream: dynamic) : BaseOutput() {\n    override fun print(message: Any?) {\n        // TODO: Using local
variable because of bug in block decomposition lowering in IR backend\n        val messageString =
String(message)\n        outputStream.write(messageString)\n    } \n\n}\n\n/** JsName used to make the declaration
available outside of module to test it */\n\n@JsName("OutputToConsoleLog")\n\ninternal class OutputToConsoleLog
: BaseOutput() {\n    override fun print(message: Any?) {\n        console.log(message)\n    } \n\n override fun
println(message: Any?) {\n        console.log(message)\n    } \n\n override fun println() {\n        console.log("\n")
}\n\n}\n\n/** JsName used to make the declaration available outside of module to test it and use at try.kotl.in
*/\n\n@JsName("BufferedOutput")\n\ninternal open class BufferedOutput : BaseOutput() {\n    var buffer = ""\n\n
override fun print(message: Any?) {\n        buffer += String(message)\n    } \n\n override fun flush() {\n        buffer
= ""\n    } \n\n}\n\n/** JsName used to make the declaration available outside of module to test it
*/\n\n@JsName("BufferedOutputToConsoleLog")\n\ninternal class BufferedOutputToConsoleLog : BufferedOutput()\n
{\n    override fun print(message: Any?) {\n        var s = String(message)\n        val i = s.nativeLastIndexOf("\n",
0)\n        if (i >= 0) {\n            buffer += s.substring(0, i)\n            flush()\n            s = s.substring(i + 1)\n        } \n
        buffer += s\n    } \n\n override fun flush() {\n        console.log(buffer)\n        buffer = ""\n    } \n\n}\n\n/** JsName
used to make the declaration available outside of module to test it and use at try.kotl.in
*/\n\n@JsName("output")\n\ninternal var output = run {\n    val isNode: Boolean = js("typeof process !== 'undefined'
&& process.versions && !process.versions.node")\n    if (isNode) NodeJsOutput(js("process.stdout")) else
BufferedOutputToConsoleLog()\n}\n\n@kotlin.internal.InlineOnly\n\nprivate inline fun String(value: Any?): String =
js("String")(value)\n\n/** Prints the line separator to the standard output stream. */\n\npublic actual fun println() {\n
output.println()\n}\n\n/** Prints the given [message] and the line separator to the standard output stream. */\n\npublic
actual fun println(message: Any?) {\n    output.println(message)\n}\n\n/** Prints the given [message] to the standard
output stream. */\n\npublic actual fun print(message: Any?) {\n    output.print(message)\n}\n\n", /*\n * Copyright 2010-
2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the
Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.coroutines\n\nimport
kotlin.coroutines.intrinsics.CoroutineSingletons.\n\nimport
kotlin.coroutines.intrinsics.COROUTINE_SUSPENDED\n\n@PublishedApi\n\n@SinceKotlin("1.3")\n\ninternal
actual class SafeContinuation<in T>\n\ninternal actual constructor(\n    private val delegate: Continuation<T>,\n
initialResult: Any?)\n) : Continuation<T> {\n    @PublishedApi\n    internal actual constructor(delegate:
Continuation<T>) : this(delegate, UNDECIDED)\n\n    public actual override val context: CoroutineContext\n
get() = delegate.context\n\n    private var result: Any? = initialResult\n\n    public actual override fun
resumeWith(result: Result<T>) {\n        val cur = this.result\n        when {\n            cur === UNDECIDED -> {\n
                this.result = result.value\n            }\n            cur === COROUTINE_SUSPENDED -> {\n                this.result =
RESUMED\n                delegate.resumeWith(result)\n            }\n            else -> throw
IllegalStateException("Already resumed")\n        }\n    }\n\n    @PublishedApi\n    internal actual fun
getOrThrow(): Any? {\n        if (result === UNDECIDED) {\n            result = COROUTINE_SUSPENDED\n
return COROUTINE_SUSPENDED\n        }\n        val result = this.result\n        return when {\n            result ===
RESUMED -> COROUTINE_SUSPENDED // already called continuation, indicate COROUTINE_SUSPENDED
upstream\n            result is Result.Failure -> throw result.exception\n            else -> result // either
COROUTINE_SUSPENDED or data\n        }\n    }\n\n}\n\n", /*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin
Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be
found in the license/LICENSE.txt file.\n */\n\npackage kotlin.coroutines.js.internal\n\nimport
kotlin.coroutines.Continuation\n\nimport
kotlin.coroutines.EmptyCoroutineContext\n\n@PublishedApi\n\n@SinceKotlin("1.3")\n\ninternal val
EmptyContinuation = Continuation<Any?>(EmptyCoroutineContext) { result ->\n    result.getOrThrow()\n}\n\n", /*

```

```

* Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code
is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage
kotlin.js\n\n/**\n * Exposes the [Date API](https://developer.mozilla.org/en-
US/docs/Web/JavaScript/Reference/Global_Objects/Date) to Kotlin.\n
*\n\n@Suppress("NOT_DOCUMENTED")\npublic external class Date() {\n    public constructor(milliseconds:
Number)\n    public constructor(dateString: String)\n    public constructor(year: Int, month: Int)\n    public
constructor(year: Int, month: Int, day: Int)\n    public constructor(year: Int, month: Int, day: Int, hour: Int)\n
    public constructor(year: Int, month: Int, day: Int, hour: Int, minute: Int)\n    public constructor(year: Int, month:
Int, day: Int, hour: Int, minute: Int, second: Int)\n    public constructor(year: Int, month: Int, day: Int, hour: Int,
minute: Int, second: Int, millisecond: Number)\n    public fun getDate(): Int\n    public fun getDay(): Int\n    public
fun getFullYear(): Int\n    public fun getHours(): Int\n    public fun getMilliseconds(): Int\n    public fun
getMinutes(): Int\n    public fun getMonth(): Int\n    public fun getSeconds(): Int\n    public fun getTime():
Double\n    public fun getTimezoneOffset(): Int\n    public fun getUTCDate(): Int\n    public fun
getUTCDay(): Int\n    public fun getUTCFullYear(): Int\n    public fun getUTCHours(): Int\n    public fun
getUTCMilliseconds(): Int\n    public fun getUTCMinutes(): Int\n    public fun getUTCMonth(): Int\n    public
fun getUTCSeconds(): Int\n    public fun toString(): String\n    public fun toISOString(): String\n    public
fun toJSON(): Json\n    public fun toLocaleDateString(locales: Array<String> = definedExternally, options:
LocaleOptions = definedExternally): String\n    public fun toLocaleDateString(locales: String, options:
LocaleOptions = definedExternally): String\n    public fun toLocaleString(locales: Array<String> =
definedExternally, options: LocaleOptions = definedExternally): String\n    public fun toLocaleString(locales:
String, options: LocaleOptions = definedExternally): String\n    public fun toLocaleTimeString(locales:
Array<String> = definedExternally, options: LocaleOptions = definedExternally): String\n    public fun
toLocaleTimeString(locales: String, options: LocaleOptions = definedExternally): String\n    public fun
toTimeString(): String\n    public fun toUTCString(): String\n    public companion object {\n    public fun
now(): Double\n    public fun parse(dateString: String): Double\n    public fun UTC(year: Int, month: Int):
Double\n    public fun UTC(year: Int, month: Int, day: Int): Double\n    public fun UTC(year: Int, month:
Int, day: Int, hour: Int): Double\n    public fun UTC(year: Int, month: Int, day: Int, hour: Int, minute: Int):
Double\n    public fun UTC(year: Int, month: Int, day: Int, hour: Int, minute: Int, second: Int): Double\n
    public fun UTC(year: Int, month: Int, day: Int, hour: Int, minute: Int, second: Int, millisecond: Number): Double\n
    }\n    public interface LocaleOptions {\n    public var localeMatcher: String?\n    public var timeZone:
String?\n    public var hour12: Boolean?\n    public var formatMatcher: String?\n    public var weekday:
String?\n    public var era: String?\n    public var year: String?\n    public var month: String?\n
    public var day: String?\n    public var hour: String?\n    public var minute: String?\n    public var
second: String?\n    public var timeZoneName: String? }\n}\n\npublic inline fun dateLocaleOptions(init:
Date.LocaleOptions.() -> Unit): Date.LocaleOptions {\n    val result = js("new
Object()\n    ).unsafeCast<Date.LocaleOptions>()\n    init(result)\n    return result\n"}\n\n/*\n * Copyright 2010-2018
JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the
Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.dom\n\nimport
org.w3c.dom.*\n\n/**\n * Creates a new element with the specified [name].\n * The element is initialized with
the specified [init] function.\n */\npublic fun Document.createElement(name: String, init: Element.() -> Unit):
Element = createElement(name).apply(init)\n\n/**\n * Appends a newly created element with the specified [name]
to this element.\n * The element is initialized with the specified [init] function.\n */\npublic fun
Element.appendChild(name: String, init: Element.() -> Unit): Element =\n    ownerDocument!!.createElement(name, init).also { appendChild(it) }\n\n/*\n * Copyright 2010-2018 JetBrains
s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0
license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.dom\n\nimport
org.w3c.dom.*\n\n/**\n * Returns true if the element has the given CSS class style in its 'class' attribute\n */\nfun
Element.hasClass(cssClass: String): Boolean =

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className.matches("\\\\(\\^\\.\\|s+)$cssClass($\\|s+\\.)*\\\\\\\".toRegex())\n\n/**\n * Adds CSS class to element. Has no effect if all specified classes are already in class attribute of the element\n * @return true if at least one class has been added\n */\nfun Element.addClass(vararg cssClasses: String): Boolean {\n    val missingClasses = cssClasses.filterNot { hasClass(it) }\n    if (missingClasses.isNotEmpty()) {\n        val presentClasses = className.trim()\n        className = buildString {\n            append(presentClasses)\n            if (!presentClasses.isEmpty()) {\n                append(\" \")\n            }\n            missingClasses.joinTo(this, \" \")\n        }\n        return true\n    }\n    return false\n}\n\n/**\n * Removes all [cssClasses] from element. Has no effect if all specified classes are missing in class attribute of the element\n * @return true if at least one class has been removed\n */\nfun Element.removeClass(vararg cssClasses: String): Boolean {\n    if (cssClasses.any { hasClass(it) }) {\n        val toBeRemoved = cssClasses.toSet()\n        className = className.trim().split(\"\\\\\\\\s+\".toRegex()).filter { it !in toBeRemoved }.joinToString(\" \")\n        return true\n    }\n    return false\n}\n\n\", \"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName(\"StringsKt\")\n\npackage kotlin.text\n\n/**\n * Converts the string into a regular expression [Regex] with the default options.\n */\n@kotlin.internal.InlineOnly\npublic inline fun String.toRegex(): Regex = Regex(this)\n\n/**\n * Converts the string into a regular expression [Regex] with the specified single [option].\n */\n@kotlin.internal.InlineOnly\npublic inline fun String.toRegex(option: RegexOption): Regex = Regex(this, option)\n\n/**\n * Converts the string into a regular expression [Regex] with the specified set of [options].\n */\n@kotlin.internal.InlineOnly\npublic inline fun String.toRegex(options: Set<RegexOption>): Regex = Regex(this, options)\n\", \"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName(\"StringsKt\")\n\npackage kotlin.text\n\n/**\n * A mutable sequence of characters.\n * String builder can be used to efficiently perform multiple string manipulation operations.\n */\nexpect class StringBuilder : Appendable, CharSequence {\n    /**\n     * Constructs an empty string builder.\n     */\n    constructor()\n\n    /**\n     * Constructs an empty string builder with the specified initial [capacity].\n     */\n    constructor(capacity: Int)\n\n    /**\n     * Constructs a string builder that contains the same characters as the specified [content] char sequence.\n     */\n    constructor(content: CharSequence)\n\n    /**\n     * Constructs a string builder that contains the same characters as the specified [content] string.\n     */\n    @SinceKotlin(\"1.3\")\n    @ExperimentalStdlibApi\n    constructor(content: String)\n\n    override val length: Int\n\n    override fun get(index: Int): Char\n\n    override fun subSequence(startIndex: Int, endIndex: Int): CharSequence\n\n    override fun append(value: Char): StringBuilder\n\n    override fun append(value: CharSequence?): StringBuilder\n\n    override fun append(value: CharSequence?, startIndex: Int, endIndex: Int): StringBuilder\n\n    /**\n     * Reverses the contents of this string builder and returns this instance.\n     * Surrogate pairs included in this string builder are treated as single characters.\n     * Therefore, the order of the high-low surrogates is never reversed.\n     * Note that the reverse operation may produce new surrogate pairs that were unpaired low-surrogates and high-surrogates before the operation.\n     * For example, reversing `\\uDC00\\uD800` produces `\\uD800\\uDC00` which is a valid surrogate pair.\n     */\n    fun reverse(): StringBuilder\n\n    /**\n     * Appends the string representation of the specified object [value] to this string builder and returns this instance.\n     * The overall effect is exactly as if the [value] were converted to a string by the `value.toString()` method,\n     * and then that string was appended to this string builder.\n     */\n    fun append(value: Any?): StringBuilder\n\n    /**\n     * Appends the string representation of the specified boolean [value] to this string builder and returns this instance.\n     * The overall effect is exactly as if the [value] were converted to a string by the `value.toString()` method,\n     * and then that string was appended to this string builder.\n     */\n    @SinceKotlin(\"1.3\")\n    @ExperimentalStdlibApi\n    fun append(value: Boolean): StringBuilder\n\n    /**\n     * Appends characters in the specified character array [value] to this string builder and returns this instance.\n     * Characters are appended in order, starting at the index 0.\n     */\n}

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@SinceKotlin("1.3")\n @ExperimentalStdlibApi\n fun append(value: CharArray): StringBuilder\n\n /**\n * Appends the specified string [value] to this string builder and returns this instance.\n */\n
@SinceKotlin("1.3")\n// @ExperimentalStdlibApi\n fun append(value: String): StringBuilder\n\n /**\n * Returns the current capacity of this string builder.\n * \n * The capacity is the maximum length this string builder can have before an allocation occurs.\n */\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n fun capacity(): Int\n\n /**\n * Ensures that the capacity of this string builder is at least equal to the specified [minimumCapacity].\n * \n * If the current capacity is less than the [minimumCapacity], a new backing storage is allocated with greater capacity.\n * Otherwise, this method takes no action and simply returns.\n */\n
@SinceKotlin("1.3")\n @ExperimentalStdlibApi\n fun ensureCapacity(minimumCapacity: Int)\n\n /**\n * Returns the index within this string builder of the first occurrence of the specified [string].\n * \n * Returns -1 if the specified [string] does not occur in this string builder.\n */\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n fun indexOf(string: String): Int\n\n /**\n * Returns the index within this string builder of the first occurrence of the specified [string],\n * starting at the specified [startIndex].\n * \n * Returns -1 if the specified [string] does not occur in this string builder starting at the specified [startIndex].\n */\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n fun indexOf(string: String, startIndex: Int): Int\n\n /**\n * Returns the index within this string builder of the last occurrence of the specified [string].\n * The last occurrence of empty string `\"\"` is considered to be at the index equal to `this.length`.\n * \n * Returns -1 if the specified [string] does not occur in this string builder.\n */\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n fun lastIndexOf(string: String): Int\n\n /**\n * Returns the index within this string builder of the last occurrence of the specified [string],\n * starting from the specified [startIndex] toward the beginning.\n * \n * Returns -1 if the specified [string] does not occur in this string builder starting at the specified [startIndex].\n */\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n fun lastIndexOf(string: String, startIndex: Int): Int\n\n /**\n * Inserts the string representation of the specified boolean [value] into this string builder at the specified [index] and returns this instance.\n * \n * The overall effect is exactly as if the [value] were converted to a string by the `value.toString()` method,\n * and then that string was inserted into this string builder at the specified [index].\n * \n * @throws IndexOutOfBoundsException if [index] is less than zero or greater than the length of this string builder.\n */\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n fun insert(index: Int, value: Boolean): StringBuilder\n\n /**\n * Inserts the specified character [value] into this string builder at the specified [index] and returns this instance.\n * \n * @throws IndexOutOfBoundsException if [index] is less than zero or greater than the length of this string builder.\n */\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n fun insert(index: Int, value: Char): StringBuilder\n\n /**\n * Inserts characters in the specified character array [value] into this string builder at the specified [index] and returns this instance.\n * \n * The inserted characters go in same order as in the [value] character array, starting at [index].\n * \n * @throws IndexOutOfBoundsException if [index] is less than zero or greater than the length of this string builder.\n */\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n fun insert(index: Int, value: CharArray): StringBuilder\n\n /**\n * Inserts characters in the specified character sequence [value] into this string builder at the specified [index] and returns this instance.\n * \n * The inserted characters go in the same order as in the [value] character sequence, starting at [index].\n * \n * @param index the position in this string builder to insert at.\n * @param value the character sequence from which characters are inserted. If [value] is `null`, then the four characters `\"null\"` are inserted.\n * \n * @throws IndexOutOfBoundsException if [index] is less than zero or greater than the length of this string builder.\n */\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n fun insert(index: Int, value: CharSequence?): StringBuilder\n\n /**\n * Inserts the string representation of the specified object [value] into this string builder at the specified [index] and returns this instance.\n * \n * The overall effect is exactly as if the [value] were converted to a string by the `value.toString()` method,\n * and then that string was inserted into this string builder at the specified [index].\n * \n * @throws IndexOutOfBoundsException if [index] is less than zero or greater than the length of this string builder.\n */\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n fun insert(index: Int, value: Any?): StringBuilder\n\n /**\n * Inserts the string [value] into this string builder at the specified [index] and returns this

```

instance.  
`* @throws IndexOutOfBoundsException` if [index] is less than zero or greater than the length of this string builder.  
`* ^ @SinceKotlin("1.3") @ExperimentalStdlibApi` fun insert(index: Int, value: String): StringBuilder  
`/**` Sets the length of this string builder to the specified [newLength].  
`*` If the [newLength] is less than the current length, it is changed to the specified [newLength].  
`*` Otherwise, null characters '\u0000' are appended to this string builder until its length is less than the [newLength].  
`*` Note that in Kotlin/JS [set] operator function has non-constant execution time complexity.  
`*` Therefore, increasing length of this string builder and then updating each character by index may slow down your program.  
`* @throws IndexOutOfBoundsException` or [IllegalArgumentException] if [newLength] is less than zero.  
`* ^ @SinceKotlin("1.3") @ExperimentalStdlibApi` fun setLength(newLength: Int)  
`/**` Returns a new [String] that contains characters in this string builder at [startIndex] (inclusive) and up to the [length] (exclusive).  
`* @throws IndexOutOfBoundsException` if [startIndex] is less than zero or greater than the length of this string builder.  
`* ^ @SinceKotlin("1.3") @ExperimentalStdlibApi` fun substring(startIndex: Int): String  
`/**` Returns a new [String] that contains characters in this string builder at [startIndex] (inclusive) and up to the [endIndex] (exclusive).  
`* @throws IndexOutOfBoundsException` or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this string builder indices or when `startIndex > endIndex`.  
`* ^ @SinceKotlin("1.3") @ExperimentalStdlibApi` fun substring(startIndex: Int, endIndex: Int): String  
`/**` Attempts to reduce storage used for this string builder.  
`*` If the backing storage of this string builder is larger than necessary to hold its current contents,  
`*` then it may be resized to become more space efficient.  
`*` Calling this method may, but is not required to, affect the value of the [capacity] property.  
`* ^ @SinceKotlin("1.3") @ExperimentalStdlibApi` fun trimToSize()  
`/**` Clears the content of this string builder making it empty and returns this instance.  
`* @sample samples.text.Strings.clearStringBuilder`  
`* ^ @SinceKotlin("1.3")` public expect fun StringBuilder.clear(): StringBuilder  
`/**` Sets the character at the specified [index] to the specified [value].  
`* @throws IndexOutOfBoundsException` if [index] is out of bounds of this string builder.  
`* ^ @SinceKotlin("1.3") @ExperimentalStdlibApi` public expect operator fun StringBuilder.set(index: Int, value: Char)  
`/**` Replaces characters in the specified range of this string builder with characters in the specified string [value] and returns this instance.  
`* @param startIndex` the beginning (inclusive) of the range to replace.  
`* @param endIndex` the end (exclusive) of the range to replace.  
`* @param value` the string to replace with.  
`* @throws IndexOutOfBoundsException` or [IllegalArgumentException] if [startIndex] is less than zero, greater than the length of this string builder, or `startIndex > endIndex`.  
`* ^ @SinceKotlin("1.3") @ExperimentalStdlibApi` public expect fun StringBuilder.setRange(startIndex: Int, endIndex: Int, value: String): StringBuilder  
`/**` Removes the character at the specified [index] from this string builder and returns this instance.  
`* If the `Char` at the specified [index] is part of a supplementary code point, this method does not remove the entire supplementary character.  
* @param index the index of `Char` to remove.  
* @throws IndexOutOfBoundsException if [index] is out of bounds of this string builder.  
* ^ @SinceKotlin("1.3") @ExperimentalStdlibApi public expect fun StringBuilder.deleteAt(index: Int): StringBuilder  
/** Removes characters in the specified range from this string builder and returns this instance.  
* @param startIndex the beginning (inclusive) of the range to remove.  
* @param endIndex the end (exclusive) of the range to remove.  
* @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] is out of range of this string builder indices or when `startIndex > endIndex`.  
* ^ @SinceKotlin("1.3") @ExperimentalStdlibApi public expect fun StringBuilder.deleteRange(startIndex: Int, endIndex: Int): StringBuilder  
/** Copies characters from this string builder into the [destination] character array.  
* @param destination the array to copy to.  
* @param destinationOffset the position in the array to copy to, 0 by default.  
* @param startIndex the beginning (inclusive) of the range to copy, 0 by default.  
* @param endIndex the end (exclusive) of the range to copy, length of this string builder by default.  
* @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this string builder indices or when `startIndex > endIndex`.  
* @throws IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array starting at the specified [destinationOffset],  
* or when that index is`

out of the [destination] array indices range.\n \*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic expect fun StringBuilder.toCharArray(destination: CharArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = this.length)\n\n\*\*\n \* Appends characters in a subarray of the specified character array [value] to this string builder and returns this instance.\n \*\n \* Characters are appended in order, starting at specified [startIndex].\n \*\n \* @param value the array from which characters are appended.\n \* @param startIndex the beginning (inclusive) of the subarray to append.\n \* @param endIndex the end (exclusive) of the subarray to append.\n \*\n \* @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of the [value] array indices or when `startIndex > endIndex`.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic expect fun StringBuilder.appendRange(value: CharArray, startIndex: Int, endIndex: Int): StringBuilder\n\n\*\*\n \* Appends a subsequence of the specified character sequence [value] to this string builder and returns this instance.\n \*\n \* @param value the character sequence from which a subsequence is appended. If [value] is `null`,\n \* then characters are appended as if [value] contained the four characters `\"null\"`.\n \* @param startIndex the beginning (inclusive) of the subsequence to append.\n \* @param endIndex the end (exclusive) of the subsequence to append.\n \*\n \* @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of the [value] character sequence indices or when `startIndex > endIndex`.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic expect fun StringBuilder.appendRange(value: CharSequence?, startIndex: Int, endIndex: Int): StringBuilder\n\n\*\*\n \* Inserts characters in a subarray of the specified character array [value] into this string builder at the specified [index] and returns this instance.\n \*\n \* The inserted characters go in same order as in the [value] array, starting at [index].\n \*\n \* @param index the position in this string builder to insert at.\n \* @param value the array from which characters are inserted.\n \* @param startIndex the beginning (inclusive) of the subarray to insert.\n \* @param endIndex the end (exclusive) of the subarray to insert.\n \*\n \* @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of the [value] array indices or when `startIndex > endIndex`.\n \* @throws IndexOutOfBoundsException if [index] is less than zero or greater than the length of this string builder.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic expect fun StringBuilder.insertRange(index: Int, value: CharArray, startIndex: Int, endIndex: Int): StringBuilder\n\n\*\*\n \* Inserts characters in a subsequence of the specified character sequence [value] into this string builder at the specified [index] and returns this instance.\n \*\n \* The inserted characters go in the same order as in the [value] character sequence, starting at [index].\n \*\n \* @param index the position in this string builder to insert at.\n \* @param value the character sequence from which a subsequence is inserted. If [value] is `null`,\n \* then characters will be inserted as if [value] contained the four characters `\"null\"`.\n \* @param startIndex the beginning (inclusive) of the subsequence to insert.\n \* @param endIndex the end (exclusive) of the subsequence to insert.\n \*\n \* @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of the [value] character sequence indices or when `startIndex > endIndex`.\n \* @throws IndexOutOfBoundsException if [index] is less than zero or greater than the length of this string builder.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic expect fun StringBuilder.insertRange(index: Int, value: CharSequence?, startIndex: Int, endIndex: Int): StringBuilder\n\n@Suppress(\"EXTENSION\_SHADOWED\_BY\_MEMBER\")\n@Deprecated(\"Use append(value: Any?) instead\", ReplaceWith(\"append(value = obj)\"), DeprecationLevel.WARNING)\n@kotlin.internal.InlineOnly\npublic inline fun StringBuilder.append(obj: Any?): StringBuilder = this.append(obj)\n\n\*\*\n \* Builds new string by populating newly created [StringBuilder] using provided [builderAction]\n \* and then converting it to [String].\n \*\n@kotlin.internal.InlineOnly\npublic inline fun buildString(builderAction: StringBuilder.() -> Unit): String =\nStringBuilder().apply(builderAction).toString()\n\n\*\*\n \* Builds new string by populating newly created [StringBuilder] initialized with the given [capacity]\n \* using provided [builderAction] and then converting it to [String].\n \*\n@kotlin.internal.InlineOnly\npublic inline fun buildString(capacity: Int, builderAction: StringBuilder.() -> Unit): String =\nStringBuilder(capacity).apply(builderAction).toString()\n\n\*\*\n \* Appends all arguments to the given

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StringBuidler.\n */\npublic fun StringBuidler.append(vararg value: String?): StringBuidler {\n for (item in
value)\n append(item)\n return this\n}\n\n/**\n * Appends all arguments to the given StringBuidler.\n
*/\npublic fun StringBuidler.append(vararg value: Any?): StringBuidler {\n for (item in value)\n
append(item)\n return this\n}\n\n"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\npackage kotlin.dom\n\nimport org.w3c.dom.*\n\n/**\n * Gets a value indicating
whether this node is a TEXT_NODE or a CDATA_SECTION_NODE.\n */\npublic val Node.isText: Boolean\n
get() = nodeType == Node.TEXT_NODE || nodeType == Node.CDATA_SECTION_NODE\n\n/**\n * Gets a value
indicating whether this node is an [Element].\n */\npublic val Node.isElement: Boolean\n get() = nodeType ==
Node.ELEMENT_NODE\n\n"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\npackage org.w3c.dom.events\n\npublic fun EventListener(handler: (Event) ->
Unit): EventListener = EventListenerHandler(handler)\n\nprivate class EventListenerHandler(private val handler:
(Event) -> Unit) : EventListener {\n public override fun handleEvent(event: Event) {\n handler(event)\n
}\n\n public override fun toString(): String = \"EventListenerHandler($handler)\"\n}\n\n"/*\n * Copyright 2010-
2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the
Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage org.w3c.dom\n\npublic
external interface ItemArrayLike<out T> {\n val length: Int\n fun item(index: Int): T?\n}\n\n/**\n * Returns the
view of this `ItemArrayLike<T>` collection as `List<T>`\n */\npublic fun <T> ItemArrayLike<T>.asList(): List<T>
= object : AbstractList<T>() {\n override val size: Int get() = this@asList.length\n\n override fun get(index: Int):
T = when (index) {\n in 0..lastIndex -> this@asList.item(index).unsafeCast<T>()\n else -> throw
IndexOutOfBoundsException(\"index $index is not in range [0..$lastIndex]\")\n }\n}\n\n"/*\n * Copyright 2010-
2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the
Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.dom\n\nimport
org.w3c.dom.*\n\n/**\n * Removes all the children from this node. */\npublic fun Node.clear() {\n while
(hasChildNodes()) {\n removeChild(firstChild!!)\n }\n}\n\n/**\n * Creates text node and append it to the
element.\n */\n * @return this element\n */\nfun Element.appendText(text: String): Element {\n
appendChild(ownerDocument!!.createTextNode(text))\n return this\n}\n\n"/*\n * Copyright 2010-2018 JetBrains
s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0
license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.js\n\n/**\n * Reinterprets this value
as a value of the [dynamic type](/docs/reference/dynamic-type.html).\n */\n@kotlin.internal.InlineOnly\npublic
inline fun Any?.asDynamic(): dynamic = this\n\n/**\n * Reinterprets this value as a value of the specified type [T]
without any actual type checking.\n */\n@kotlin.internal.InlineOnly\npublic inline fun <T> Any?.unsafeCast():
@kotlin.internal.NoInfer T = this.asDynamic()\n\n/**\n * Reinterprets this `dynamic` value as a value of the
specified type [T] without any actual type checking.\n
*/\n@kotlin.internal.DynamicExtension\n@JsName(\"unsafeCastDynamic\")\n@kotlin.internal.InlineOnly\npublic
inline fun <T> dynamic.unsafeCast(): @kotlin.internal.NoInfer T = this\n\n/**\n * Allows to iterate this `dynamic`
object in the following cases:\n * - when it has an `iterator` function,\n * - when it is an array\n * - when it is an
instance of [kotlin.collections.Iterable]\n */\n@kotlin.internal.DynamicExtension\npublic operator fun
dynamic.iterator(): Iterator<dynamic> {\n val r: Any? = this\n\n return when {\n this[\"iterator\"] != null -
->\n this[\"iterator\"]()\n isArrayish(r) ->\n r.unsafeCast<Array<*>>().iterator()\n\n else ->\n
(r as Iterable<*>).iterator()\n }\n}\n\n"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming
Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\n// a package is omitted to get declarations directly under the
module\n\n@JsName(\"throwNPE\")\ninternal fun throwNPE(message: String) {\n throw
NullPointerException(message)\n}\n\n@JsName(\"throwCCE\")\ninternal fun throwCCE() {\n throw
ClassCastException(\"Illegal cast\")\n}\n\n@JsName(\"throwISE\")\ninternal fun throwISE(message: String) {\n
throw IllegalStateException(message)\n}\n\n@JsName(\"throwUPAE\")\ninternal fun throwUPAE(propertyName:

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String) {\n  throw UninitializedPropertyAccessException("\lateinit property ${propertyName} has not been
initialized")\n}\n"/\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n
* Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*/\n\npackage kotlin\n\n// NOTE: Do not author your exceptions as they are written in this file, instead use this
template:\n/*\npublic open class MyException : Exception {\n  constructor() : super()\n  constructor(message:
String?) : super(message)\n  constructor(message: String?, cause: Throwable?) : super(message, cause)\n
constructor(cause: Throwable?) : super(cause)\n}\n*/\n\n// TODO: remove workarounds for KT-22053 from
direct Throwable inheritors\n// TODO: remove primary constructors, make all secondary KT-
22055\n\n@Suppress("\USELESS_ELVIS_RIGHT_IS_NULL")\npublic actual open class Error actual
constructor(message: String?, cause: Throwable?) : Throwable(message, cause ? : null) {\n  actual constructor() :
this(null, null) {\n    Error::class.js.asDynamic().call(this, null, null)\n  }\n\n  actual constructor(message:
String?) : this(message, null) {\n    Error::class.js.asDynamic().call(this, message, null)\n  }\n\n  actual
constructor(cause: Throwable?) : this(undefiend, cause) {\n    Error::class.js.asDynamic().call(this, undefiend,
cause)\n  }\n}\n\n@Suppress("\USELESS_ELVIS_RIGHT_IS_NULL")\npublic actual open class Exception
actual constructor(message: String?, cause: Throwable?) : Throwable(message, cause ? : null) {\n  actual
constructor() : this(null, null) {\n    Exception::class.js.asDynamic().call(this, null, null)\n  }\n\n  actual
constructor(message: String?) : this(message, null) {\n    Exception::class.js.asDynamic().call(this, message,
null)\n  }\n\n  actual constructor(cause: Throwable?) : this(undefiend, cause) {\n
Exception::class.js.asDynamic().call(this, undefiend, cause)\n  }\n}\n\npublic actual open class RuntimeException
actual constructor(message: String?, cause: Throwable?) : Exception(message, cause) {\n  actual constructor() :
this(null, null)\n  actual constructor(message: String?) : this(message, null)\n  actual constructor(cause:
Throwable?) : this(undefiend, cause)\n}\n\npublic actual open class IllegalArgumentException actual
constructor(message: String?, cause: Throwable?) : RuntimeException(message, cause) {\n  actual constructor() :
this(null, null)\n  actual constructor(message: String?) : this(message, null)\n  actual constructor(cause:
Throwable?) : this(undefiend, cause)\n}\n\npublic actual open class IllegalStateException actual
constructor(message: String?, cause: Throwable?) : RuntimeException(message, cause) {\n  actual constructor() :
this(null, null)\n  actual constructor(message: String?) : this(message, null)\n  actual constructor(cause:
Throwable?) : this(undefiend, cause)\n}\n\npublic actual open class IndexOutOfBoundsException actual
constructor(message: String?) : RuntimeException(message) {\n  actual constructor() : this(null)\n}\n\npublic
actual open class ConcurrentModificationException actual constructor(message: String?, cause: Throwable?) :
RuntimeException(message, cause) {\n  actual constructor() : this(null, null)\n  actual constructor(message:
String?) : this(message, null)\n  actual constructor(cause: Throwable?) : this(undefiend, cause)\n}\n\npublic actual
open class UnsupportedOperationException actual constructor(message: String?, cause: Throwable?) :
RuntimeException(message, cause) {\n  actual constructor() : this(null, null)\n  actual constructor(message:
String?) : this(message, null)\n  actual constructor(cause: Throwable?) : this(undefiend, cause)\n}\n\npublic
actual open class NumberFormatException actual constructor(message: String?) :
IllegalArgumentException(message) {\n  actual constructor() : this(null)\n}\n\npublic actual open class
NullPointerException actual constructor(message: String?) : RuntimeException(message) {\n  actual constructor() :
this(null)\n}\n\npublic actual open class ClassCastException actual constructor(message: String?) :
RuntimeException(message) {\n  actual constructor() : this(null)\n}\n\npublic actual open class AssertionError
private constructor(message: String?, cause: Throwable?) : Error(message, cause) {\n  actual constructor() :
this(null)\n  constructor(message: String?) : this(message, null)\n  actual constructor(message: Any?) :
this(message.toString(), message as? Throwable)\n}\n\npublic actual open class NoSuchElementException actual
constructor(message: String?) : RuntimeException(message) {\n  actual constructor() :
this(null)\n}\n\n@SinceKotlin("\1.3")\npublic actual open class ArithmeticException actual constructor(message:
String?) : RuntimeException(message) {\n  actual constructor() : this(null)\n}\n\npublic actual open class
NoWhenBranchMatchedException actual constructor(message: String?, cause: Throwable?) :
RuntimeException(message, cause) {\n  actual constructor() : this(null, null)\n  actual constructor(message:

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String?): this(message, null)\n  actual constructor(cause: Throwable?): this(undefine
d, cause)\n}\n\npublic actual
open class UninitializedPropertyAccessException actual constructor(message: String?,
cause: Throwable?):
RuntimeException(message, cause) {\n  actual constructor(): this(null, null)\n  ac
tual constructor(message:
String?): this(message, null)\n  actual constructor(cause: Throwable?): this(undef
ined, cause)\n}\n"/**\n *
Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n
* Use of this source code is
governed by the Apache 2.0 license that can be found in the license/LICENSE.txt fi
le.\n */\npackage
kotlin.collections\n\n/**\n * Groups elements from the [Grouping] source by key and
counts elements in each
group.\n * @return a [Map] associating the key of each group with the count of ele
ment in the group.\n
*\n @SinceKotlin("1.1")\npublic actual fun <T, K> Grouping<T, K>.eachCount(): Map<K,
Int> =\n  fold(0) {
acc, _ -> acc + 1 }\n\n/**\n * Groups elements from the [Grouping] source by key
and sums values provided by
the [valueSelector] function for elements in each group.\n * @return a [Map] ass
ociating the key of each group
with the count of element in the group.\n * @SinceKotlin("1.1")\npublic inline fu
n <T, K> Grouping<T,
K>.eachSumOf(valueSelector: (T) -> Int): Map<K, Int> =\n  fold(0) { acc, e -> acc
+ valueSelector(e)
}\n"/**\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this
source code is governed by the Apache 2.0 license that can be found in the licens
e/LICENSE.txt file.\n
*\n @file:kotlin.jvm.JvmName("GroupingKt")\n @file:kotlin.jvm.JvmMultifileClass\n
\npackage
kotlin.collections\n\n/**\n * Represents a source of elements with a [keyOf] functi
on, which can be applied to each
element to get its key.\n * A [Grouping] structure serves as an intermediate step
in group-and-fold operations:\n
* they group elements by their keys and then fold each group with some aggregating
operation.\n * It is created
by attaching `keySelector: (T) -> K` function to a source of elements.\n * To ge
t an instance of [Grouping] use
one of `groupingBy` extension functions:\n * - [Iterable.groupingBy]\n * - [Seque
nce.groupingBy]\n * -
[Array.groupingBy]\n * - [CharSequence.groupingBy]\n * For the list of group-and-fo
ld operations available,
see the [extension functions](#extension-functions) for `Grouping`.\n * @SinceKot
lin("1.1")\npublic interface
Grouping<T, out K> {\n  /** Returns an [Iterator] over the elements of the source of
this grouping. *\n  fun
sourceIterator(): Iterator<T>\n  /** Extracts the key of an [element]. *\n  fun keyOf
(element: T): K\n}\n\n/**\n * Groups elements from the [Grouping] source by key and
applies [operation] to the elements of each group
sequentially,\n * passing the previously accumulated value and the current element as
arguments, and stores the
results in a new map.\n * The key for each element is provided by the [Grouping.ke
yOf] function.\n * @param
operation function is invoked on each element with the following parameters:\n * -
`key`: the key of the group
this element belongs to;\n * - `accumulator`: the current value of the accumulator
of the group, can be `null`
if it's the first `element` encountered in the group;\n * - `element`: the element
from the source being aggregated;\n
* - `first`: indicates whether it's the first `element` encountered in the group.\n
*\n @return a [Map] associating
the key of each group with the result of aggregation of the group elements.\n * @sa
mple
samples.collections.Grouping.aggregateByRadix\n * @SinceKotlin("1.1")\npublic inli
ne fun <T, K, R>
Grouping<T, K>.aggregate(\n  operation: (key: K, accumulator: R?, element: T, first:
Boolean) -> R)\n): Map<K,
R> {\n  return aggregateTo(mutableMapOf<K, R>(), operation)\n}\n\n/**\n * Groups
elements from the
[Grouping] source by key and applies [operation] to the elements of each group sequ
entially,\n * passing the
previously accumulated value and the current element as arguments,\n * and stores th
e results in the given
[destination] map.\n * The key for each element is provided by the [Grouping.keyOf]
function.\n * @param
operation a function that is invoked on each `element` with the following paramete
rs:\n * - `key`: the key of the group
this element belongs to;\n * - `accumulator`: the current value of the accumulator
of the group, can be `null` if it's
the first `element` encountered in the group;\n * - `element`: the element from th
e source being aggregated;\n * -
`first`: indicates whether it's the first `element` encountered in the group.\n *
*\n If the [destination] map already has
a value corresponding to some key,\n * then the elements being aggregated for that
key are never considered as
`first`.\n * @return the [destination] map associating the key of each group with
the result of aggregation of the
group elements.\n * @sample samples.collections.Grouping.aggregateByRadixTo\n
*\n @SinceKotlin("1.1")\npublic inline fun <T, K, R, M : MutableMap<in K, R>> Grouping<T,
K>.aggregateTo(\n  destination: M,\n  operation: (key: K, accumulator: R?, element:
T, first: Boolean) -> R)\n): M

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{\n  for (e in this.sourceIterator()) {\n      val key = keyOf(e)\n      val accumulator = destination[key]\n      destination[key] = operation(key, accumulator, e, accumulator == null && !destination.containsKey(key))\n  }\n  return destination\n}\n\n/**\n * Groups elements from the [Grouping] source by key and applies [operation] to the\n * elements of each group sequentially,\n * passing the previously accumulated value and the current element as\n * arguments, and stores the results in a new map.\n * An initial value of accumulator is provided by\n * [initialValueSelector] function.\n * @param initialValueSelector a function that provides an initial value of\n * accumulator for each group.\n * It's invoked with parameters:\n * - `key`: the key of the group;\n * - `element`: the first element being encountered in that group.\n * @param operation a function that is invoked on each element\n * with the following parameters:\n * - `key`: the key of the group this element belongs to;\n * - `accumulator`: the current value of the accumulator of the group;\n * - `element`: the element from the source being accumulated.\n * @return a [Map] associating the key of each group with the result of accumulating the group elements.\n * @sample samples.collections.Grouping.foldByEvenLengthWithComputedInitialValue\n */\n\n@SinceKotlin("1.1")\npublic inline fun <T, K, R> Grouping<T, K>.fold(\n  initialValueSelector: (key: K,\n  element: T) -> R,\n  operation: (key: K, accumulator: R, element: T) -> R\n): Map<K, R> =\n  @Suppress("UNCHECKED_CAST")\n  aggregate { key, acc, e, first -> operation(key, if (first)\n  initialValueSelector(key, e) else acc as R, e) }\n\n/**\n * Groups elements from the [Grouping] source by key and\n * applies [operation] to the elements of each group sequentially,\n * passing the previously accumulated value and the\n * current element as arguments,\n * and stores the results in the given [destination] map.\n * An initial value of\n * accumulator is provided by [initialValueSelector] function.\n * @param initialValueSelector a function that\n * provides an initial value of accumulator for each group.\n * It's invoked with parameters:\n * - `key`: the key of the\n * group;\n * - `element`: the first element being encountered in that group.\n * If the [destination] map already has\n * a value corresponding to some key, that value is used as an initial value of\n * the accumulator for that group and the\n * [initialValueSelector] function is not called for that group.\n * @param operation a function that is invoked on\n * each element with the following parameters:\n * - `key`: the key of the group this element belongs to;\n * -\n * `accumulator`: the current value of the accumulator of the group;\n * - `element`: the element from the source being\n * accumulated.\n * @return the [destination] map associating the key of each group with the result of\n * accumulating the group elements.\n * @sample\n * samples.collections.Grouping.foldByEvenLengthWithComputedInitialValueTo\n */\n\n@SinceKotlin("1.1")\npublic\n  inline fun <T, K, R, M : MutableMap<in K, R>> Grouping<T, K>.foldTo(\n  destination: M,\n  initialValueSelector: (key: K, element: T) -> R,\n  operation: (key: K, accumulator: R, element: T) -> R\n): M =\n  @Suppress("UNCHECKED_CAST")\n  aggregateTo(destination) { key, acc, e, first -> operation(key, if (first)\n  initialValueSelector(key, e) else acc as R, e) }\n\n/**\n * Groups elements from the [Grouping] source by key and\n * applies [operation] to the elements of each group sequentially,\n * passing the previously accumulated value and the\n * current element as arguments, and stores the results in a new map.\n * An initial value of accumulator is the same\n * [initialValue] for each group.\n * @param operation a function that is invoked on each element with the\n * following parameters:\n * - `accumulator`: the current value of the accumulator of the group;\n * - `element`: the\n * element from the source being accumulated.\n * @return a [Map] associating the key of each group with the\n * result of accumulating the group elements.\n * @sample\n * samples.collections.Grouping.foldByEvenLengthWithConstantInitialValue\n */\n\n@SinceKotlin("1.1")\npublic\n  inline fun <T, K, R> Grouping<T, K>.fold(\n  initialValue: R,\n  operation: (accumulator: R, element: T) -> R\n):\n  Map<K, R> =\n  @Suppress("UNCHECKED_CAST")\n  aggregate { _, acc, e, first -> operation(if (first)\n  initialValue else acc as R, e) }\n\n/**\n * Groups elements from the [Grouping] source by key and applies\n * [operation] to the elements of each group sequentially,\n * passing the previously accumulated value and the current\n * element as arguments,\n * and stores the results in the given [destination] map.\n * An initial value of accumulator is the same [initialValue] for each group.\n * If the [destination] map already has a value corresponding to the key\n * of some group,\n * that value is used as an initial value of the accumulator for that group.\n * @param operation\n * a function that is invoked on each element with the following parameters:\n * - `accumulator`: the current value of\n * the accumulator of the group;\n * - `element`: the element from the source being accumulated.\n * @return the

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[destination] map associating the key of each group with the result of accumulating the group elements.\n *
@sample samples.collections.Grouping.foldByEvenLengthWithConstantInitialValueTo\n
*\n@SinceKotlin("1.1")\npublic inline fun <T, K, R, M : MutableMap<in K, R>> Grouping<T, K>.foldTo(\n
destination: M,\n initialValue: R,\n operation: (accumulator: R, element: T) -> R)\n: M =\n
@Suppress("UNCHECKED_CAST")\n aggregateTo(destination) { _, acc, e, first -> operation(if (first)
initialValue else acc as R, e) }\n\n**\n * Groups elements from the [Grouping] source by key and applies the
reducing [operation] to the elements of each group\n * sequentially starting from the second element of the group,\n
* passing the previously accumulated value and the current element as arguments,\n * and stores the results in a new
map.\n * An initial value of accumulator is the first element of the group.\n *\n * @param operation a function that
is invoked on each subsequent element of the group with the following parameters:\n * - `key`: the key of the group
this element belongs to;\n * - `accumulator`: the current value of the accumulator of the group;\n * - `element`: the
element from the source being accumulated.\n *\n * @return a [Map] associating the key of each group with the
result of accumulating the group elements.\n * @sample samples.collections.Grouping.reduceByMaxVowels\n
*\n@SinceKotlin("1.1")\npublic inline fun <S, T : S, K> Grouping<T, K>.reduce(\n operation: (key: K,
accumulator: S, element: T) -> S)\n: Map<K, S> =\n aggregate { key, acc, e, first ->\n
@Suppress("UNCHECKED_CAST")\n if (first) e else operation(key, acc as S, e)\n }\n\n**\n * Groups
elements from the [Grouping] source by key and applies the reducing [operation] to the elements of each group\n *
sequentially starting from the second element of the group,\n * passing the previously accumulated value and the
current element as arguments,\n * and stores the results in the given [destination] map.\n * An initial value of
accumulator is the first element of the group.\n *\n * If the [destination] map already has a value corresponding
to the key of some group,\n * that value is used as an initial value of the accumulator for that group and the first
element of that group is also\n * subjected to the [operation].\n *\n * @param operation a function that is invoked
on each subsequent element of the group with the following parameters:\n * - `accumulator`: the current value of the
accumulator of the group;\n * - `element`: the element from the source being folded;\n *\n * @return the
[destination] map associating the key of each group with the result of accumulating the group elements.\n *
@sample samples.collections.Grouping.reduceByMaxVowelsTo\n *\n@SinceKotlin("1.1")\npublic inline fun <S,
T : S, K, M : MutableMap<in K, S>> Grouping<T, K>.reduceTo(\n destination: M,\n operation: (key: K,
accumulator: S, element: T) -> S)\n: M =\n aggregateTo(destination) { key, acc, e, first ->\n
@Suppress("UNCHECKED_CAST")\n if (first) e else operation(key, acc as S, e)\n }\n\n**\n * Groups
elements from the [Grouping] source by key and counts elements in each group to the given [destination] map.\n *\n
* If the [destination] map already has a value corresponding to the key of some group,\n * that value is used as an
initial value of the counter for that group.\n *\n * @return the [destination] map associating the key of each group
with the count of elements in the group.\n *\n * @sample samples.collections.Grouping.groupingByEachCount\n
*\n@SinceKotlin("1.1")\npublic fun <T, K, M : MutableMap<in K, Int>> Grouping<T,
K>.eachCountTo(destination: M): M =\n foldTo(destination, 0) { acc, _ -> acc + 1 }\n\n**\n * Groups
elements from the [Grouping] source by key and sums values provided by the [valueSelector] function for elements
in each group\n * to the given [destination] map.\n *\n * If the [destination] map already has a value
corresponding to the key of some group,\n * that value is used as an initial value of the sum for that group.\n *\n
* @return the [destination] map associating the key of each group with the sum of elements in the group.\n *
*\n@SinceKotlin("1.1")\npublic inline fun <T, K, M : MutableMap<in K, Int>> Grouping<T,
K>.eachSumOfTo(destination: M, valueSelector: (T) -> Int): M =\n foldTo(destination, 0) { acc, e -> acc +
valueSelector(e) }\n\n**\n * TODO: sum by long and by double overloads\n\npublic inline fun <T, K, M :
MutableMap<in K, Long>> Grouping<T, K>.sumEachByLongTo(destination: M, valueSelector: (T) -> Long): M
=\n foldTo(destination, 0L) { acc, e -> acc + valueSelector(e) }\n\npublic inline fun <T, K> Grouping<T,
K>.sumEachByLong(valueSelector: (T) -> Long): Map<K, Long> =\n fold(0L) { acc, e -> acc +
valueSelector(e) }\n\npublic inline fun <T, K, M : MutableMap<in K, Double>> Grouping<T,
K>.sumEachByDoubleTo(destination: M, valueSelector: (T) -> Double): M =\n foldTo(destination, 0.0) { acc, e
-> acc + valueSelector(e) }\n\npublic inline fun <T, K> Grouping<T, K>.sumEachByDouble(valueSelector: (T) ->

```



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Double): Map<K, Double> =\n    fold(0.0) { acc, e -> acc + valueSelector(e)}\n*/\n * Copyright 2010-2018
JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the
Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.js\n\n/**\n * Exposes
the JavaScript [Math object](https://developer.mozilla.org/en/docs/Web/JavaScript/Reference/Global_Objects/Math)
to Kotlin.\n */\n@Deprecated("Use top-level functions from kotlin.math package instead.", level =
DeprecationLevel.WARNING)\npublic external object Math {\n    @Deprecated("Use kotlin.math.PI instead.",
ReplaceWith("PI", "kotlin.math.PI"), level = DeprecationLevel.ERROR)\n    public val PI: Double\n    @Deprecated("Use Random.nextDouble instead", ReplaceWith("kotlin.random.Random.nextDouble()",
"kotlin.random.Random"), level = DeprecationLevel.WARNING)\n    public fun random(): Double\n    @Deprecated("Use kotlin.math.abs instead.", ReplaceWith("abs(value)", "kotlin.math.abs"), level =
DeprecationLevel.ERROR)\n    public fun abs(value: Double): Double\n    @Deprecated("Use kotlin.math.acos
instead.", ReplaceWith("acos(value)", "kotlin.math.acos"), level = DeprecationLevel.ERROR)\n    public fun
acos(value: Double): Double\n    @Deprecated("Use kotlin.math.asin instead.", ReplaceWith("asin(value)",
"kotlin.math.asin"), level = DeprecationLevel.ERROR)\n    public fun asin(value: Double): Double\n    @Deprecated("Use kotlin.math.atan instead.", ReplaceWith("atan(value)", "kotlin.math.atan"), level =
DeprecationLevel.ERROR)\n    public fun atan(value: Double): Double\n    @Deprecated("Use kotlin.math.atan2
instead.", ReplaceWith("atan2(y, x)", "kotlin.math.atan2"), level = DeprecationLevel.ERROR)\n    public fun
atan2(y: Double, x: Double): Double\n    @Deprecated("Use kotlin.math.cos instead.",
ReplaceWith("cos(value)", "kotlin.math.cos"), level = DeprecationLevel.ERROR)\n    public fun cos(value:
Double): Double\n    @Deprecated("Use kotlin.math.sin instead.", ReplaceWith("sin(value)", "kotlin.math.sin"),
level = DeprecationLevel.ERROR)\n    public fun sin(value: Double): Double\n    @Deprecated("Use
kotlin.math.exp instead.", ReplaceWith("exp(value)", "kotlin.math.exp"), level = DeprecationLevel.ERROR)\n
public fun exp(value: Double): Double\n    @Deprecated("Use maxOf or kotlin.math.max instead", level =
DeprecationLevel.ERROR)\n    public fun max(vararg values: Int): Int\n    @Deprecated("Use maxOf or
kotlin.math.max instead", level = DeprecationLevel.ERROR)\n    public fun max(vararg values: Float): Float\n
    @Deprecated("Use maxOf or kotlin.math.max instead", level = DeprecationLevel.ERROR)\n    public fun
max(vararg values: Double): Double\n    @Deprecated("Use minOf or kotlin.math.min instead", level =
DeprecationLevel.ERROR)\n    public fun min(vararg values: Int): Int\n    @Deprecated("Use minOf or
kotlin.math.min instead", level = DeprecationLevel.ERROR)\n    public fun min(vararg values: Float): Float\n
    @Deprecated("Use minOf or kotlin.math.min instead", level = DeprecationLevel.ERROR)\n    public fun
min(vararg values: Double): Double\n    @Deprecated("Use kotlin.math.sqrt instead.",
ReplaceWith("sqrt(value)", "kotlin.math.sqrt"), level = DeprecationLevel.ERROR)\n    public fun sqrt(value:
Double): Double\n    @Deprecated("Use kotlin.math.tan instead.", ReplaceWith("tan(value)",
"kotlin.math.tan"), level = DeprecationLevel.ERROR)\n    public fun tan(value: Double): Double\n    @Deprecated("Use kotlin.math.ln instead.", ReplaceWith("ln(value)", "kotlin.math.ln"), level =
DeprecationLevel.ERROR)\n    public fun log(value: Double): Double\n    @Deprecated("Use kotlin.math.pow
instead.", ReplaceWith("base.pow(exp)", "kotlin.math.pow"), level = DeprecationLevel.ERROR)\n    public fun
pow(base: Double, exp: Double): Double\n    @Deprecated("Use kotlin.math.round instead.",
ReplaceWith("round(value)", "kotlin.math.round"), level = DeprecationLevel.ERROR)\n    public fun
round(value: Number): Int\n    @Deprecated("Use kotlin.math.floor instead.", ReplaceWith("floor(value)",
"kotlin.math.floor"), level = DeprecationLevel.ERROR)\n    public fun floor(value: Number): Int\n    @Deprecated("Use kotlin.math.ceil instead.", ReplaceWith("ceil(value)", "kotlin.math.ceil"), level =
DeprecationLevel.ERROR)\n    public fun ceil(value: Number): Int\n\n    @PublishedApi\n    internal fun
trunc(value: Number): Double\n    @PublishedApi\n    internal fun sign(value: Number): Double\n\n    @PublishedApi\n    internal fun sinh(value: Double): Double\n    @PublishedApi\n    internal fun cosh(value:
Double): Double\n    @PublishedApi\n    internal fun tanh(value: Double): Double\n    @PublishedApi\n    internal
fun asinh(value: Double): Double\n    @PublishedApi\n    internal fun acosh(value: Double): Double\n    @PublishedApi\n    internal fun atanh(value: Double): Double\n\n    @PublishedApi\n    internal fun hypot(x:

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Double, y: Double): Double\n\n @PublishedApi\n internal fun expm1(value: Double): Double\n\n
@PublishedApi\n internal fun log10(value: Double): Double\n @PublishedApi\n internal fun log2(value:
Double): Double\n @PublishedApi\n internal fun log1p(value: Double): Double\n\n @PublishedApi\n
internal fun clz32(value: Int): Int\n}\n\n/**\n * Returns the smaller of two values.\n
*\n*\n@Suppress("DEPRECATION")\n@Deprecated("Use minOf or kotlin.math.min instead",
ReplaceWith("minOf(a, b)"), level = DeprecationLevel.ERROR)\npublic fun Math.min(a: Long, b: Long): Long =
if (a <= b) a else b\n\n/**\n * Returns the greater of two values.\n
*\n*\n@Suppress("DEPRECATION")\n@Deprecated("Use maxOf or kotlin.math.max instead",
ReplaceWith("maxOf(a, b)"), level = DeprecationLevel.ERROR)\npublic fun Math.max(a: Long, b: Long): Long =
if (a >= b) a else b\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\npackage kotlin.js\n\n/**\n * An interface for indexing access to a collection of
key-value pairs, where type of key is [String] and type of value is [Any?][Any].\n *\n*\npublic external interface Json
{\n /**\n * Calls to the function will be translated to indexing operation (square brackets) on the receiver with
[propertyName] as the argument.\n * \n * E.g. for next code:\n * ```kotlin\n * fun test(j: Json, p: String) =
j["prop"] + j.get(p)\n * ```\n * \n * will be generated:\n * ```js\n * function test(j, p) {\n * return
j["prop"] + j[p];\n * }\n * ```\n * \n *\n operator fun get(propertyName: String): Any?\n\n /**\n * Calls
of the function will be translated to an assignment of [value] to the receiver indexed (with square brackets/index
operation) with [propertyName].\n * \n * E.g. for the following code:\n * ```kotlin\n * fun test(j: Json, p:
String, newValue: Any) {\n * j["prop"] = 1\n * j.set(p, newValue)\n * }\n * ```\n * \n * will be
generated:\n * ```js\n * function test(j, p, newValue) {\n * j["prop"] = 1;\n * j[p] = newValue;\n *
}\n * }\n * ```\n * \n *\n operator fun set(propertyName: String, value: Any?): Unit\n}\n\n/**\n * Returns a
simple JavaScript object (as [Json]) using provided key-value pairs as names and values of its properties.\n
*\n*\npublic fun json(vararg pairs: Pair<String, Any?>): Json {\n val res: dynamic = js("{}")\n for ((name,
value) in pairs) {\n res[name] = value\n }\n return res\n}\n\n/**\n * Adds key-value pairs from [other] to
[this].\n * Returns the original receiver.\n *\n*\npublic fun Json.add(other: Json): Json {\n val keys: Array<String> =
js("Object").keys(other)\n for (key in keys) {\n if (other.asDynamic().hasOwnProperty(key)) {\n
this[key] = other[key];\n }\n }\n return this\n}\n\n/**\n * Exposes the JavaScript [JSON]
object](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/JSON) to Kotlin.\n
*\n*\n@Suppress("NOT_DOCUMENTED")\npublic external object JSON {\n public fun stringify(o: Any?):
String\n public fun stringify(o: Any?, replacer: ((key: String, value: Any?) -> Any?)): String\n public fun
stringify(o: Any?, replacer: ((key: String, value: Any?) -> Any?)? = definedExternally, space: Int): String\n
public fun stringify(o: Any?, replacer: ((key: String, value: Any?) -> Any?)? = definedExternally, space: String): String\n
public fun stringify(o: Any?, replacer: Array<String>): String\n public fun stringify(o: Any?, replacer:
Array<String>, space: Int): String\n public fun stringify(o: Any?, replacer: Array<String>, space: String):
String\n\n public fun <T> parse(text: String): T\n public fun <T> parse(text: String, reviver: ((key: String, value:
Any?) -> Any?)): T\n}\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\n@file:Suppress("DEPRECATION", "DEPRECATION_ERROR")\npackage
kotlin.math\n\nimport kotlin.internal.InlineOnly\nimport kotlin.js.Math as nativeMath\n\n// region
==== Double Math =====\n\n/**\n * Computes the
sine of the angle [x] given in radians.\n * \n * Special cases:\n * - `sin(NaN|+Inf|-Inf)` is `NaN`\n
*\n*\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun sin(x: Double): Double =
nativeMath.sin(x)\n\n/**\n * Computes the cosine of the angle [x] given in radians.\n * \n * Special cases:\n * -
`cos(NaN|+Inf|-Inf)` is `NaN`\n * \n *\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun cos(x: Double):
Double = nativeMath.cos(x)\n\n/**\n * Computes the tangent of the angle [x] given in radians.\n * \n * Special cases:\n
* - `tan(NaN|+Inf|-Inf)` is `NaN`\n * \n *\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun tan(x:
Double): Double = nativeMath.tan(x)\n\n/**\n * Computes the arc sine of the value [x];\n * the returned value is an

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angle in the range from  $-\pi/2$  to  $\pi/2$  radians.  
`*\n * Special cases:\n * - `asin(x)` is `NaN`, when `abs(x) > 1` or x is `NaN`\n *@\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun asin(x: Double): Double = nativeMath.asin(x)\n\n/**\n * Computes the arc cosine of the value [x];\n * the returned value is an angle in the range from `0.0` to `PI` radians.\n * Special cases:\n * - `acos(x)` is `NaN`, when `abs(x) > 1` or x is `NaN`\n *@\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun acos(x: Double): Double = nativeMath.acos(x)\n\n/**\n * Computes the arc tangent of the value [x];\n * the returned value is an angle in the range from  $-\pi/2$  to  $\pi/2$  radians.\n * Special cases:\n * - `atan(NaN)` is `NaN`\n *@\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun atan(x: Double): Double = nativeMath.atan(x)\n\n/**\n * Returns the angle `theta` of the polar coordinates `(r, theta)` that correspond\n * to the rectangular coordinates `(x, y)` by computing the arc tangent of the value  $y / x$ ;\n * the returned value is an angle in the range from  $-\pi$  to  $\pi$  radians.\n * Special cases:\n * - `atan2(0.0, 0.0)` is `0.0`\n * - `atan2(0.0, x)` is `0.0` for  $x > 0$  and  $\pi$  for  $x < 0$ \n * - `atan2(-0.0, x)` is  $-0.0$  for  $x > 0$  and  $-\pi$  for  $x < 0$ \n * - `atan2(y, +Inf)` is  $0.0$  for  $0 < y < +Inf$  and  $-0.0$  for  $-\infty < y < 0$ \n * - `atan2(y, -Inf)` is  $\pi$  for  $0 < y < +Inf$  and  $-\pi$  for  $-\infty < y < 0$ \n * - `atan2(y, 0.0)` is  $\pi/2$  for  $y > 0$  and  $-\pi/2$  for  $y < 0$ \n * - `atan2(+Inf, x)` is  $\pi/2$  for finite  $x$ \n * - `atan2(-Inf, x)` is  $-\pi/2$  for finite  $x$ \n * - `atan2(NaN, x)` and  $\text{atan2}(y, \text{NaN})$  is `NaN`\n *@\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun atan2(y: Double, x: Double): Double = nativeMath.atan2(y, x)\n\n/**\n * Computes the hyperbolic sine of the value [x].\n * Special cases:\n * - `sinh(NaN)` is `NaN`\n * - `sinh(+Inf)` is  $+\infty$ \n * - `sinh(-Inf)` is  $-\infty$ \n *@\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun sinh(x: Double): Double = nativeMath.sinh(x)\n\n/**\n * Computes the hyperbolic cosine of the value [x].\n * Special cases:\n * - `cosh(NaN)` is `NaN`\n * - `cosh(+Inf|-Inf)` is  $+\infty$ \n *@\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun cosh(x: Double): Double = nativeMath.cosh(x)\n\n/**\n * Computes the hyperbolic tangent of the value [x].\n * Special cases:\n * - `tanh(NaN)` is `NaN`\n * - `tanh(+Inf)` is  $1.0$ \n * - `tanh(-Inf)` is  $-1.0$ \n *@\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun tanh(x: Double): Double = nativeMath.tanh(x)\n\n/**\n * Computes the inverse hyperbolic sine of the value [x].\n * The returned value is `y` such that  $\sinh(y) == x$ .\n * Special cases:\n * - `asinh(NaN)` is `NaN`\n * - `asinh(+Inf)` is  $+\infty$ \n * - `asinh(-Inf)` is  $-\infty$ \n *@\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun asinh(x: Double): Double = nativeMath.asinh(x)\n\n/**\n * Computes the inverse hyperbolic cosine of the value [x].\n * The returned value is positive `y` such that  $\cosh(y) == x$ .\n * Special cases:\n * - `acosh(NaN)` is `NaN`\n * - `acosh(x)` is `NaN` when  $x < 1$ \n * - `acosh(+Inf)` is  $+\infty$ \n *@\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun acosh(x: Double): Double = nativeMath.acosh(x)\n\n/**\n * Computes the inverse hyperbolic tangent of the value [x].\n * The returned value is `y` such that  $\tanh(y) == x$ .\n * Special cases:\n * - `tanh(NaN)` is `NaN`\n * - `tanh(x)` is `NaN` when  $x > 1$  or  $x < -1$ \n * - `tanh(1.0)` is  $+\infty$ \n * - `tanh(-1.0)` is  $-\infty$ \n *@\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun atanh(x: Double): Double = nativeMath.atanh(x)\n\n/**\n * Computes  $\sqrt{x^2 + y^2}$  without intermediate overflow or underflow.\n * Special cases:\n * - returns  $+\infty$  if any of arguments is infinite\n * - returns `NaN` if any of arguments is `NaN` and the other is not infinite\n *@\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun hypot(x: Double, y: Double): Double = nativeMath.hypot(x, y)\n\n/**\n * Computes the positive square root of the value [x].\n * Special cases:\n * - `sqrt(x)` is `NaN` when  $x < 0$  or  $x$  is `NaN`\n *@\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun sqrt(x: Double): Double = nativeMath.sqrt(x)\n\n/**\n * Computes Euler's number `e` raised to the power of the value [x].\n * Special cases:\n * - `exp(NaN)` is `NaN`\n * - `exp(+Inf)` is  $+\infty$ \n * - `exp(-Inf)` is  $0.0$ \n *@\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun exp(x: Double): Double = nativeMath.exp(x)\n\n/**\n * Computes  $\exp(x) - 1$ .\n * This function can be implemented to produce more precise result for [x] near zero.\n * Special cases:\n * -  $\text{expm1}(\text{NaN})$  is `NaN`\n * -  $\text{expm1}(+\infty)$  is  $+\infty$ \n * -  $\text{expm1}(-\infty)$  is  $-1.0$ \n * @see [exp] function.\n *@\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun expm1(x: Double): Double = nativeMath.expm1(x)\n\n/**\n * Computes the logarithm of the value [x] to the given [base].\n * Special cases:\n * -  $\log(x, b)$  is `NaN` if either `x` or `b` are `NaN`\n * -  $\log(x, b)$  is`

`NaN` when `x < 0` or `b <= 0` or `b == 1.0`.  
`-log(+Inf, +Inf)` is `NaN`.  
`-log(+Inf, b)` is `+Inf` for `b > 1` and `-Inf` for `b < 1`.  
`-log(0.0, b)` is `-Inf` for `b > 1` and `+Inf` for `b > 1`.  
 See also logarithm functions for common fixed bases: `[ln]`, `[log10]` and `[log2]`.

```

@SinceKotlin("1.2")\npublic actual fun log(x: Double, base: Double): Double {
    if (base <= 0.0 || base == 1.0) return Double.NaN
    return nativeMath.log(x) / nativeMath.log(base)
}

```

Computes the natural logarithm (base `E`) of the value `[x]`.  
 Special cases:  
`-ln(NaN)` is `NaN`.  
`-ln(x)` is `NaN` when `x < 0.0`.  
`-ln(+Inf)` is `+Inf`.  
`-ln(0.0)` is `-Inf`.
 

```

@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun ln(x: Double): Double =
    nativeMath.log(x)

```

Computes the common logarithm (base 10) of the value `[x]`.  
 @see `[ln]` function for special cases.
 

```

@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun log10(x: Double): Double =
    nativeMath.log10(x)

```

Computes the binary logarithm (base 2) of the value `[x]`.  
 @see `[ln]` function for special cases.
 

```

@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun log2(x: Double): Double =
    nativeMath.log2(x)

```

Computes `ln(x + 1)`.  
 This function can be implemented to produce more precise result for `[x]` near zero.  
 Special cases:  
`-ln1p(NaN)` is `NaN`.  
`-ln1p(x)` is `NaN` where `x < -1.0`.  
`-ln1p(-1.0)` is `-Inf`.  
`-ln1p(+Inf)` is `+Inf`.  
 @see `[ln]` function.
 

```

@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun ln1p(x: Double): Double =
    nativeMath.log1p(x)

```

Rounds the given value `[x]` to an integer towards positive infinity.  
 @return the smallest double value that is greater than or equal to the given value `[x]` and is a mathematical integer.  
 Special cases:  
`-ceil(x)` is `x` where `x` is `NaN` or `+Inf` or `-Inf` or already a mathematical integer.
 

```

@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun ceil(x: Double): Double =
    nativeMath.ceil(x).unsafeCast<Double>() // TODO: Remove unsafe cast after removing public js.math

```

Rounds the given value `[x]` to an integer towards negative infinity.  
 @return the largest double value that is smaller than or equal to the given value `[x]` and is a mathematical integer.  
 Special cases:  
`-floor(x)` is `x` where `x` is `NaN` or `+Inf` or `-Inf` or already a mathematical integer.
 

```

@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun floor(x: Double): Double =
    nativeMath.floor(x).unsafeCast<Double>()

```

Rounds the given value `[x]` to an integer towards zero.  
 @return the value `[x]` having its fractional part truncated.  
 Special cases:  
`-truncate(x)` is `x` where `x` is `NaN` or `+Inf` or `-Inf` or already a mathematical integer.
 

```

@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun truncate(x: Double): Double =
    nativeMath.trunc(x)

```

Rounds the given value `[x]` towards the closest integer with ties rounded towards even integer.  
 Special cases:  
`-round(x)` is `x` where `x` is `NaN` or `+Inf` or `-Inf` or already a mathematical integer.
 

```

@SinceKotlin("1.2")\npublic actual fun round(x: Double): Double {
    if (x % 0.5 != 0.0) {
        return nativeMath.round(x).unsafeCast<Double>()
    }
    val floor = floor(x)
    return if (floor % 2 == 0.0) floor else ceil(x)
}

```

Returns the absolute value of the given value `[x]`.  
 Special cases:  
`-abs(NaN)` is `NaN`.  
 @see `absoluteValue` extension property for `[Double]`.
 

```

@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun abs(x: Double): Double =
    nativeMath.abs(x)

```

Returns the sign of the given value `[x]`:  
`-1.0` if the value is negative,  
`0.0` if the value is zero,  
`1.0` if the value is positive.  
 Special case:  
`-sign(NaN)` is `NaN`.
 

```

@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun sign(x: Double): Double =
    nativeMath.sign(x)

```

Returns the smaller of two values.  
 If either value is `NaN`, then the result is `NaN`.
 

```

@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun min(a: Double, b: Double): Double =
    nativeMath.min(a, b)

```

Returns the greater of two values.  
 If either value is `NaN`, then the result is `NaN`.
 

```

@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun max(a: Double, b: Double): Double =
    nativeMath.max(a, b)

```

Raises this value to the power `[x]`.  
 Special cases:  
`-b.pow(0.0)` is `1.0`.  
`-b.pow(1.0) == b`.  
`-b.pow(NaN)` is `NaN`.  
`-NaN.pow(x)` is `NaN` for `x != 0.0`.  
`-b.pow(Inf)` is `NaN` for `abs(b) == 1.0`.  
`-b.pow(x)` is `NaN` for `b < 0` and `x` is finite and not an integer.
 

```

@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun Double.pow(x: Double): Double =
    nativeMath.pow(this, x)

```

Raises this value to the integer power `[n]`.  
 See the other overload of `[pow]` for details.
 

```

@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun Double.pow(n: Int): Double =
    nativeMath.pow(this, n.toDouble())

```

Returns the absolute value of this value.  
 Special cases:  
`-abs(NaN)` is `NaN`.

```

- `NaN.absoluteValue` is `NaN`  

actual inline val Double.absoluteValue: Double get() = nativeMath.abs(this)  

Returns the sign of this value:  

- 1.0 if the value is negative,  

- zero if the value is zero,  

- 1.0 if the value is positive  

Special case:  

`NaN.sign` is `NaN`  

actual inline val Double.sign: Double get() = nativeMath.sign(this)  

Returns this value with the sign bit same as of the [sign] value.  

`NaN.ulp` is `NaN`  

actual inline fun Double.withSign(sign: Int): Double = this.withSign(sign.toDouble())  

Returns the ulp (unit in the last place) of this value.  

An ulp is a positive distance between this value and the next nearest [Double] value larger in magnitude.  

Special Cases:  

- `NaN.ulp` is `NaN`  

- `x.ulp` is `+Inf` when `x` is `+Inf` or `-Inf`  

- `0.0.ulp` is `Double.MIN_VALUE`  

actual val Double.ulp: Double get() = when {  

  this < 0 -> (-this).ulp  

  this.isNaN() || this == Double.POSITIVE_INFINITY -> this  

  this == Double.MAX_VALUE -> this - this.nextDown()  

  else -> this.nextUp() - this  

}  

Returns the [Double] value nearest to this value in direction of positive infinity.  

actual fun Double.nextUp(): Double = when {  

  this.isNaN() || this == Double.POSITIVE_INFINITY -> this  

  this == 0.0 -> Double.MIN_VALUE  

  else -> Double.fromBits(this.toRawBits() + if (this > 0) 1 else -1)  

}  

Returns the [Double] value nearest to this value in direction of negative infinity.  

actual fun Double.nextDown(): Double = when {  

  this.isNaN() || this == Double.NEGATIVE_INFINITY -> this  

  this == 0.0 -> -Double.MIN_VALUE  

  else -> Double.fromBits(this.toRawBits() + if (this > 0) -1 else 1)  

}  

Returns the [Double] value nearest to this value in direction from this value towards the value [to].  

Special cases:  

- `x.nextTowards(y)` is `NaN` if either `x` or `y` are `NaN`  

- `x.nextTowards(x) == x`  

actual fun Double.nextTowards(to: Double): Double = when {  

  this.isNaN() || to.isNaN() -> Double.NaN  

  to == this -> to  

  to > this -> this.nextUp()  

  else /* to < this */ -> this.nextDown()  

}  

Rounds this [Double] value to the nearest integer and converts the result to [Int].  

Ties are rounded towards positive infinity.  

Special cases:  

- `x.roundToInt() == Int.MAX_VALUE` when `x > Int.MAX_VALUE`  

- `x.roundToInt() == Int.MIN_VALUE` when `x < Int.MIN_VALUE`  

@throws IllegalArgumentException when this value is `NaN`  

actual fun Double.roundToInt(): Int = when {  

  isNaN() -> throw IllegalArgumentException("Cannot round NaN value.")  

  this > Int.MAX_VALUE -> Int.MAX_VALUE  

  this < Int.MIN_VALUE -> Int.MIN_VALUE  

  else -> nativeMath.round(this).unsafeCast<Double>().toInt()  

}  

Rounds this [Double] value to the nearest integer and converts the result to [Long].  

Ties are rounded towards positive infinity.  

Special cases:  

- `x.roundToLong() == Long.MAX_VALUE` when `x > Long.MAX_VALUE`  

- `x.roundToLong() == Long.MIN_VALUE` when `x < Long.MIN_VALUE`  

@throws IllegalArgumentException when this value is `NaN`  

actual fun Double.roundToLong(): Long = when {  

  isNaN() -> throw IllegalArgumentException("Cannot round NaN value.")  

  this > Long.MAX_VALUE -> Long.MAX_VALUE  

  this < Long.MIN_VALUE -> Long.MIN_VALUE  

  else -> nativeMath.round(this).unsafeCast<Double>().toLong()  

}  

endregion  

region =====  

Float Math =====  

Computes the sine of the angle [x] given in radians.  

Special cases:  

- `sin(NaN|+Inf|-Inf)` is `NaN`  

actual inline fun sin(x: Float): Float = nativeMath.sin(x.toDouble()).toFloat()  

Computes the cosine of the angle [x] given in radians.  

Special cases:  

- `cos(NaN|+Inf|-Inf)` is `NaN`  

actual inline fun cos(x: Float): Float = nativeMath.cos(x.toDouble()).toFloat()  

Computes the tangent of the angle [x] given in radians.  

Special cases:  

- `tan(NaN|+Inf|-Inf)` is `NaN`  

actual inline fun tan(x: Float): Float = nativeMath.tan(x.toDouble()).toFloat()  

Computes the arc sine of the value [x];  

the returned value is an angle in the range from `-PI/2` to `PI/2` radians.  

Special cases:  

- `asin(x)` is `NaN`, when `abs(x) > 1` or x is `NaN`  

actual inline fun asin(x: Float): Float =

```

`nativeMath.asin(x.toDouble()).toFloat()` Computes the arc cosine of the value  $[x]$ ; the returned value is an angle in the range from  $0.0$  to  $\pi$  radians. Special cases: `asin(x)` is `NaN`, when `abs(x) > 1` or `x` is `NaN`.

`nativeMath.acos(x.toDouble()).toFloat()` Computes the arc tangent of the value  $[x]$ ; the returned value is an angle in the range from  $-\pi/2$  to  $\pi/2$  radians. Special cases: `atan(NaN)` is `NaN`.

`nativeMath.atan(x.toDouble()).toFloat()` Returns the angle  $\theta$  of the polar coordinates  $(r, \theta)$  that correspond to the rectangular coordinates  $(x, y)$  by computing the arc tangent of the value  $[y] / [x]$ ; the returned value is an angle in the range from  $-\pi$  to  $\pi$  radians. Special cases: `atan2(0.0, 0.0)` is `0.0`; `atan2(0.0, x)` is `0.0` for  $x > 0$  and  $\pi$  for  $x < 0$ ; `atan2(-0.0, x)` is `-0.0` for  $x > 0$  and  $-\pi$  for  $x < 0$ ; `atan2(y, +Inf)` is `0.0` for  $0 < y < +Inf$  and `-0.0` for  $-Inf < y < 0$ ; `atan2(y, -Inf)` is  $\pi$  for  $0 < y < +Inf$  and  $-\pi$  for  $-Inf < y < 0$ ; `atan2(y, 0.0)` is  $\pi/2$  for  $y > 0$  and  $-\pi/2$  for  $y < 0$ ; `atan2(+Inf, x)` is  $\pi/2$  for finite  $x$ ; `atan2(-Inf, x)` is  $-\pi/2$  for finite  $x$ ; `atan2(NaN, x)` and `atan2(y, NaN)` is `NaN`.

`nativeMath.atanh(x.toDouble()).toFloat()` Computes the hyperbolic sine of the value  $[x]$ . Special cases: `sinh(NaN)` is `NaN`; `sinh(+Inf)` is `+Inf`; `sinh(-Inf)` is `-Inf`.

`nativeMath.cosh(x.toDouble()).toFloat()` Computes the hyperbolic cosine of the value  $[x]$ . Special cases: `cosh(NaN)` is `NaN`; `cosh(+Inf)` is `+Inf`; `cosh(-Inf)` is `+Inf`.

`nativeMath.tanh(x.toDouble()).toFloat()` Computes the hyperbolic tangent of the value  $[x]$ . Special cases: `tanh(NaN)` is `NaN`; `tanh(+Inf)` is `1.0`; `tanh(-Inf)` is `-1.0`.

`nativeMath.asinh(x.toDouble()).toFloat()` Computes the inverse hyperbolic sine of the value  $[x]$ . The returned value is  $y$  such that  $\sinh(y) == x$ . Special cases: `asinh(NaN)` is `NaN`; `asinh(+Inf)` is `+Inf`; `asinh(-Inf)` is `-Inf`.

`nativeMath.acosh(x.toDouble()).toFloat()` Computes the inverse hyperbolic cosine of the value  $[x]$ . The returned value is positive  $y$  such that  $\cosh(y) == x$ . Special cases: `acosh(NaN)` is `NaN`; `acosh(x)` is `NaN` when  $x < 1$ ; `acosh(+Inf)` is `+Inf`.

`nativeMath.atanh(x.toDouble()).toFloat()` Computes the inverse hyperbolic tangent of the value  $[x]$ . The returned value is  $y$  such that  $\tanh(y) == x$ . Special cases: `atanh(NaN)` is `NaN`; `atanh(x)` is `NaN` when  $x > 1$  or  $x < -1$ ; `atanh(1.0)` is `+Inf`; `atanh(-1.0)` is `-Inf`.

`nativeMath.hypot(x.toDouble(), y.toDouble()).toFloat()` Computes  $\sqrt{x^2 + y^2}$  without intermediate overflow or underflow. Special cases: returns `+Inf` if any of arguments is infinite; returns `NaN` if any of arguments is `NaN` and the other is not infinite.

`nativeMath.sqrt(x.toDouble()).toFloat()` Computes the positive square root of the value  $[x]$ . Special cases: `sqrt(x)` is `NaN` when  $x < 0$  or  $x$  is `NaN`.

`nativeMath.exp(x.toDouble()).toFloat()` Computes Euler's number  $e$  raised to the power of the value  $[x]$ . Special cases: `exp(NaN)` is `NaN`; `exp(+Inf)` is `+Inf`; `exp(-Inf)` is `0.0`.

`nativeMath.expm1(x.toDouble()).toFloat()` Computes  $\exp(x) - 1$ . This function can be implemented to produce more precise result for  $[x]$  near zero. Special cases: `expm1(NaN)` is `NaN`; `expm1(+Inf)` is `+Inf`; `expm1(-Inf)` is `-1.0`. @see `[exp]` function.

`nativeMath.log(x.toDouble(), base.toDouble()).toFloat()` Computes the logarithm of the value  $[x]$  to the given  $[base]$ .

\*\n \* Special cases:\n \* - `log(x, b)` is `NaN` if either `x` or `b` are `NaN`\n \* - `log(x, b)` is `NaN` when `x < 0` or `b <= 0` or `b == 1.0`\n \* - `log(+Inf, +Inf)` is `NaN`\n \* - `log(+Inf, b)` is `+Inf` for `b > 1` and `-Inf` for `b < 1`\n \* - `log(0.0, b)` is `-Inf` for `b > 1` and `+Inf` for `b > 1`\n \* See also logarithm functions for common fixed bases: [ln], [log10] and [log2].\n \*\n @SinceKotlin("1.2")\n @InlineOnly\n public actual inline fun log(x: Float, base: Float): Float = log(x.toDouble(), base.toDouble()).toFloat()\n \*\*\n \* Computes the natural logarithm (base `E`) of the value [x].\n \*\n \* Special cases:\n \* - `ln(NaN)` is `NaN`\n \* - `ln(x)` is `NaN` when `x < 0.0`\n \* - `ln(+Inf)` is `+Inf`\n \* - `ln(0.0)` is `-Inf`\n \*\n @SinceKotlin("1.2")\n @InlineOnly\n public actual inline fun ln(x: Float): Float = nativeMath.log(x.toDouble()).toFloat()\n \*\*\n \* Computes the common logarithm (base 10) of the value [x].\n \*\n \* @see [ln] function for special cases.\n \*\n @SinceKotlin("1.2")\n @InlineOnly\n public actual inline fun log10(x: Float): Float = nativeMath.log10(x.toDouble()).toFloat()\n \*\*\n \* Computes the binary logarithm (base 2) of the value [x].\n \*\n \* @see [ln] function for special cases.\n \*\n @SinceKotlin("1.2")\n @InlineOnly\n public actual inline fun log2(x: Float): Float = nativeMath.log2(x.toDouble()).toFloat()\n \*\*\n \* Computes `ln(a + 1)`.\n \*\n \* This function can be implemented to produce more precise result for [x] near zero.\n \*\n \* Special cases:\n \* - `ln1p(NaN)` is `NaN`\n \* - `ln1p(x)` is `NaN` where `x < -1.0`\n \* - `ln1p(-1.0)` is `-Inf`\n \* - `ln1p(+Inf)` is `+Inf`\n \*\n \* @see [ln] function\n \*\n @see [expm1] function\n \*\n @SinceKotlin("1.2")\n @InlineOnly\n public actual inline fun ln1p(x: Float): Float = nativeMath.log1p(x.toDouble()).toFloat()\n \*\*\n \* Rounds the given value [x] to an integer towards positive infinity.\n \*\n \* @return the smallest Float value that is greater than or equal to the given value [x] and is a mathematical integer.\n \*\n \* Special cases:\n \* - `ceil(x)` is `x` where `x` is `NaN` or `+Inf` or `-Inf` or already a mathematical integer.\n \*\n @SinceKotlin("1.2")\n @InlineOnly\n public actual inline fun ceil(x: Float): Float = nativeMath.ceil(x.toDouble()).toFloat()\n \*\*\n \* Rounds the given value [x] to an integer towards negative infinity.\n \*\n \* @return the largest Float value that is smaller than or equal to the given value [x] and is a mathematical integer.\n \*\n \* Special cases:\n \* - `floor(x)` is `x` where `x` is `NaN` or `+Inf` or `-Inf` or already a mathematical integer.\n \*\n @SinceKotlin("1.2")\n @InlineOnly\n public actual inline fun floor(x: Float): Float = nativeMath.floor(x.toDouble()).toFloat()\n \*\*\n \* Rounds the given value [x] to an integer towards zero.\n \*\n \* @return the value [x] having its fractional part truncated.\n \*\n \* Special cases:\n \* - `truncate(x)` is `x` where `x` is `NaN` or `+Inf` or `-Inf` or already a mathematical integer.\n \*\n @SinceKotlin("1.2")\n @InlineOnly\n public actual inline fun truncate(x: Float): Float = truncate(x.toDouble()).toFloat()\n \*\*\n \* Rounds the given value [x] towards the closest integer with ties rounded towards even integer.\n \*\n \* Special cases:\n \* - `round(x)` is `x` where `x` is `NaN` or `+Inf` or `-Inf` or already a mathematical integer.\n \*\n @SinceKotlin("1.2")\n @InlineOnly\n public actual inline fun round(x: Float): Float = round(x.toDouble()).toFloat()\n \*\*\n \* Returns the absolute value of the given value [x].\n \*\n \* Special cases:\n \*\n \* - `abs(NaN)` is `NaN`\n \*\n \* @see absoluteValue extension property for [Float]\n \*\n @SinceKotlin("1.2")\n @InlineOnly\n public actual inline fun abs(x: Float): Float = nativeMath.abs(x.toDouble()).toFloat()\n \*\*\n \* Returns the sign of the given value [x]:\n \*\n \* - `-1.0` if the value is negative,\n \*\n \* - zero if the value is zero,\n \*\n \* - `1.0` if the value is positive\n \*\n \* Special case:\n \*\n \* - `sign(NaN)` is `NaN`\n \*\n @SinceKotlin("1.2")\n @InlineOnly\n public actual inline fun sign(x: Float): Float = nativeMath.sign(x.toDouble()).toFloat()\n \*\*\n \* Returns the smaller of two values.\n \*\n \* If either value is `NaN`, then the result is `NaN`.\n \*\n @SinceKotlin("1.2")\n @InlineOnly\n public actual inline fun min(a: Float, b: Float): Float = nativeMath.min(a, b)\n \*\*\n \* Returns the greater of two values.\n \*\n \* If either value is `NaN`, then the result is `NaN`.\n \*\n @SinceKotlin("1.2")\n @InlineOnly\n public actual inline fun max(a: Float, b: Float): Float = nativeMath.max(a, b)\n \*\*\n \* extensions\n \*\n \*\*\n \* Raises this value to the power [x].\n \*\n \* Special cases:\n \*\n \* - `b.pow(0.0)` is `1.0`\n \*\n \* - `b.pow(1.0) == b`\n \*\n \* - `b.pow(NaN)` is `NaN`\n \*\n \* - `NaN.pow(x)` is `NaN` for `x != 0.0`\n \*\n \* - `b.pow(Inf)` is `NaN` for `abs(b) == 1.0`\n \*\n \* - `b.pow(x)` is `NaN` for `b < 0` and `x` is finite and not an integer\n \*\n @SinceKotlin("1.2")\n @InlineOnly\n public actual inline fun Float.pow(x: Float): Float = nativeMath.pow(this.toDouble(), x.toDouble()).toFloat()\n \*\*\n \* Raises this value to the integer power [n].\n \*\n \* See the other overload of [pow] for details.\n \*\n @SinceKotlin("1.2")\n @InlineOnly\n public actual inline fun Float.pow(n: Int): Float = nativeMath.pow(this.toDouble(), n.toDouble()).toFloat()\n \*\*\n \* Returns the

absolute value of this value.  
Special cases: `-NaN.absoluteValue` is `-NaN`  
@see `abs` function

```

@SinceKotlin("1.2")
@InlineOnly
public actual inline val Float.absoluteValue: Float get() =
    nativeMath.abs(this.toDouble()).toFloat()

```

Returns the sign of this value:  
- `-1.0` if the value is negative,  
- zero if the value is zero,  
- `1.0` if the value is positive  
Special case: `-NaN.sign` is `-NaN`

```

@SinceKotlin("1.2")
@InlineOnly
public actual inline val Float.sign: Float get() =
    nativeMath.sign(this.toDouble()).toFloat()

```

Returns this value with the sign bit same as of the [sign] value.  
If [sign] is `-NaN` the sign of the result is undefined.

```

@SinceKotlin("1.2")
@InlineOnly
public actual inline fun Float.withSign(sign: Float): Float =
    this.toDouble().withSign(sign.toDouble()).toFloat()

```

Returns this value with the sign bit same as of the [sign] value.

```

@SinceKotlin("1.2")
@InlineOnly
public actual inline fun Float.withSign(sign: Int): Float =
    this.toDouble().withSign(sign.toDouble()).toFloat()

```

Rounds this [Float] value to the nearest integer and converts the result to [Int].  
Ties are rounded towards positive infinity.  
Special cases:  
- `x.roundToInt() == Int.MAX_VALUE` when `x > Int.MAX_VALUE`  
- `x.roundToInt() == Int.MIN_VALUE` when `x < Int.MIN_VALUE`  
@throws `IllegalArgumentException` when this value is `-NaN`

```

@SinceKotlin("1.2")
@InlineOnly
public actual inline fun Float.roundToInt(): Int =
    toDouble().roundToInt()

```

Rounds this [Float] value to the nearest integer and converts the result to [Long].  
Ties are rounded towards positive infinity.  
Special cases:  
- `x.roundToLong() == Long.MAX_VALUE` when `x > Long.MAX_VALUE`  
- `x.roundToLong() == Long.MIN_VALUE` when `x < Long.MIN_VALUE`  
@throws `IllegalArgumentException` when this value is `-NaN`

```

@SinceKotlin("1.2")
@InlineOnly
public actual inline fun Float.roundToLong(): Long =
    toDouble().roundToLong()

```

endregion  
region ===== Integer Math  
=====

Returns the absolute value of the given value [n].  
Special cases:  
- `abs(Int.MIN_VALUE)` is `-Int.MIN_VALUE` due to an overflow  
@see `absoluteValue` extension property for [Int]

```

// TODO: remove manual 'or' when KT-19290 is fixed
@SinceKotlin("1.2")
public actual fun abs(n: Int): Int = if (n < 0) (-n or 0) else n

```

Returns the smaller of two values.

```

@SinceKotlin("1.2")
@InlineOnly
public actual inline fun min(a: Int, b: Int): Int =
    nativeMath.min(a, b)

```

Returns the greater of two values.

```

@SinceKotlin("1.2")
@InlineOnly
public actual inline fun max(a: Int, b: Int): Int = nativeMath.max(a, b)

```

Returns the absolute value of this value.  
Special cases:  
- `-Int.MIN_VALUE.absoluteValue` is `-Int.MIN_VALUE` due to an overflow  
@see `abs` function

```

@SinceKotlin("1.2")
@InlineOnly
public actual inline val Int.absoluteValue: Int get() = abs(this)

```

Returns the sign of this value:  
- `-1` if the value is negative,  
- `0` if the value is zero,  
- `1` if the value is positive

```

@SinceKotlin("1.2")
public actual val Int.sign: Int get() = when {
    this < 0 -> -1
    this > 0 -> 1
    else -> 0
}

```

Returns the absolute value of the given value [n].  
Special cases:  
- `abs(Long.MIN_VALUE)` is `-Long.MIN_VALUE` due to an overflow  
@see `absoluteValue` extension property for [Long]

```

@SinceKotlin("1.2")
public actual fun abs(n: Long): Long = if (n < 0) -n else n

```

Returns the smaller of two values.

```

@SinceKotlin("1.2")
@Suppress("NOTHING_TO_INLINE")
public actual inline fun min(a: Long, b: Long): Long = if (a <= b) a else b

```

Returns the greater of two values.

```

@SinceKotlin("1.2")
@Suppress("NOTHING_TO_INLINE")
public actual inline fun max(a: Long, b: Long): Long = if (a >= b) a else b

```

Returns the absolute value of this value.  
Special cases:  
- `-Long.MIN_VALUE.absoluteValue` is `-Long.MIN_VALUE` due to an overflow  
@see `abs` function

```

@SinceKotlin("1.2")
@InlineOnly
public actual inline val Long.absoluteValue: Long get() =
    abs(this)

```

Returns the sign of this value:  
- `-1` if the value is negative,  
- `0` if the value is zero,  
- `1` if the value is positive

```

@SinceKotlin("1.2")
public actual val Long.sign: Int get() = when {
    this < 0 -> -1
    this > 0 -> 1
    else -> 0
}

```

endregion  
"/\*

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```

package kotlin

```

Returns `true` if the specified



```

number is a\n * Not-a-Number (NaN) value, `false` otherwise.\n */\npublic actual fun Double.isNaN(): Boolean =
this != this\n\n/**\n * Returns `true` if the specified number is a\n * Not-a-Number (NaN) value, `false` otherwise.\n */\npublic actual fun Float.isNaN(): Boolean = this != this\n\n/**\n * Returns `true` if this value is infinitely large in
magnitude.\n */\npublic actual fun Double.isInfinite(): Boolean = this == Double.POSITIVE_INFINITY || this ==
Double.NEGATIVE_INFINITY\n\n/**\n * Returns `true` if this value is infinitely large in magnitude.\n */\npublic
actual fun Float.isInfinite(): Boolean = this == Float.POSITIVE_INFINITY || this ==
Float.NEGATIVE_INFINITY\n\n/**\n * Returns `true` if the argument is a finite floating-point value; returns
`false` otherwise (for `NaN` and infinity arguments).\n */\npublic actual fun Double.isFinite(): Boolean =
!isInfinite() && !isNaN()\n\n/**\n * Returns `true` if the argument is a finite floating-point value; returns `false`
otherwise (for `NaN` and infinity arguments).\n */\npublic actual fun Float.isFinite(): Boolean = !isInfinite() &&
!isNaN()\n\n/**\n * Counts the number of set bits in the binary representation of this [Int] number.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic actual fun Int.countOneBits(): Int {\n // Hacker's
Delight 5-1 algorithm\n    var v = this\n    v = (v and 0x55555555) + (v.ushr(1) and 0x55555555)\n    v = (v and
0x33333333) + (v.ushr(2) and 0x33333333)\n    v = (v and 0x0F0F0F0F) + (v.ushr(4) and 0x0F0F0F0F)\n    v = (v
and 0x00FF00FF) + (v.ushr(8) and 0x00FF00FF)\n    v = (v and 0x0000FFFF) + (v.ushr(16))\n    return
v\n}\n\n/**\n * Counts the number of consecutive most significant bits that are zero in the binary representation of
this [Int] number.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@Suppress("DEPRECATION")\n@kotlin.internal.InlineO
nly\npublic actual inline fun Int.countLeadingZeroBits(): Int = kotlin.js.Math.clz32(this)\n\n/**\n * Counts the
number of consecutive least significant bits that are zero in the binary representation of this [Int] number.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic actual fun Int.countTrailingZeroBits(): Int =\n //
Hacker's Delight 5-4 algorithm for expressing countTrailingZeroBits with countLeadingZeroBits\n    Int.SIZE_BITS
- (this or -this).inv().countLeadingZeroBits()\n\n/**\n * Returns a number having a single bit set in the position of
the most significant set bit of this [Int] number,\n * or zero, if this number is zero.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic actual fun Int.takeHighestOneBit(): Int =\n if (this
== 0) 0 else 1.shl(Int.SIZE_BITS - 1 - countLeadingZeroBits())\n\n/**\n * Returns a number having a single bit set
in the position of the least significant set bit of this [Int] number,\n * or zero, if this number is zero.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic actual fun Int.takeLowestOneBit(): Int =\n //
Hacker's Delight 2-1 algorithm for isolating rightmost 1-bit\n    this and -this\n\n/**\n * Rotates the binary
representation of this [Int] number left by the specified [bitCount] number of bits.\n * The most significant bits
pushed out from the left side reenter the number as the least significant bits on the right side.\n * Rotating the
number left by a negative bit count is the same as rotating it right by the negated bit count:\n * `number.rotateLeft(-
n) == number.rotateRight(n)`\n * Rotating by a multiple of [Int.SIZE_BITS] (32) returns the same number, or
more generally\n * `number.rotateLeft(n) == number.rotateLeft(n % 32)`\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic actual fun Int.rotateLeft(bitCount: Int): Int =\n
shl(bitCount) or ushr(Int.SIZE_BITS - bitCount)\n\n/**\n * Rotates the binary representation of this [Int] number
right by the specified [bitCount] number of bits.\n * The least significant bits pushed out from the right side reenter
the number as the most significant bits on the left side.\n * Rotating the number right by a negative bit count is
the same as rotating it left by the negated bit count:\n * `number.rotateRight(-n) == number.rotateLeft(n)`\n *
Rotating by a multiple of [Int.SIZE_BITS] (32) returns the same number, or more generally\n *
`number.rotateRight(n) == number.rotateRight(n % 32)`\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic actual fun Int.rotateRight(bitCount: Int): Int =\n
shl(Int.SIZE_BITS - bitCount) or ushr(bitCount)\n\n/**\n * Counts the number of set bits in the binary
representation of this [Long] number.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic actual fun
Long.countOneBits(): Int =\n    high.countOneBits() + low.countOneBits()\n\n/**\n * Counts the number of
consecutive most significant bits that are zero in the binary representation of this [Long] number.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic actual fun Long.countLeadingZeroBits(): Int =\n
when (val high = this.high) {\n    0 -> Int.SIZE_BITS + low.countLeadingZeroBits()\n    else ->

```

```

high.countLeadingZeroBits()\n } \n\n/**\n * Counts the number of consecutive least significant bits that are zero in
the binary representation of this [Long] number.\n * \n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic
actual fun Long.countTrailingZeroBits(): Int =\n when (val low = this.low) {\n     0 -> Int.SIZE_BITS +
high.countTrailingZeroBits()\n     else -> low.countTrailingZeroBits()\n } \n\n/**\n * Returns a number having a
single bit set in the position of the most significant set bit of this [Long] number,\n * or zero, if this number is
zero.\n * \n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic actual fun Long.takeHighestOneBit(): Long
=\n when (val high = this.high) {\n     0 -> Long(low.takeHighestOneBit(), 0)\n     else -> Long(0,
high.takeHighestOneBit())\n } \n\n/**\n * Returns a number having a single bit set in the position of the least
significant set bit of this [Long] number,\n * or zero, if this number is zero.\n * \n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic actual fun Long.takeLowestOneBit(): Long =\n
when (val low = this.low) {\n     0 -> Long(0, high.takeLowestOneBit())\n     else ->
Long(low.takeLowestOneBit(), 0)\n } \n\n/**\n * Rotates the binary representation of this [Long] number left by
the specified [bitCount] number of bits.\n * The most significant bits pushed out from the left side reenter the
number as the least significant bits on the right side.\n * \n\n * Rotating the number left by a negative bit count is the
same as rotating it right by the negated bit count:\n * `number.rotateLeft(-n) == number.rotateRight(n)`\n * \n\n * Rotating by a multiple of [Long.SIZE_BITS] (64) returns the same number, or more generally\n *
`number.rotateLeft(n) == number.rotateLeft(n % 64)`\n * \n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic actual fun Long.rotateLeft(bitCount: Int): Long {\n
if ((bitCount and 31) != 0) {\n     val low = this.low\n     val high = this.high\n     val newLow =
low.shl(bitCount) or high.ushr(-bitCount)\n     val newHigh = high.shl(bitCount) or low.ushr(-bitCount)\n
return if ((bitCount and 32) == 0) Long(newLow, newHigh) else Long(newHigh, newLow)\n } else {\n     return
if ((bitCount and 32) == 0) this else Long(high, low)\n } \n\n}\n\n/**\n * Rotates the binary representation of this
[Long] number right by the specified [bitCount] number of bits.\n * The least significant bits pushed out from the
right side reenter the number as the most significant bits on the left side.\n * \n\n * Rotating the number right by a
negative bit count is the same as rotating it left by the negated bit count:\n * `number.rotateRight(-n) ==
number.rotateLeft(n)`\n * \n\n * Rotating by a multiple of [Long.SIZE_BITS] (64) returns the same number, or more
generally\n * `number.rotateRight(n) == number.rotateRight(n % 64)`\n * \n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic actual inline fun
Long.rotateRight(bitCount: Int): Long = rotateLeft(-bitCount)\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and
Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that
can be found in the license/LICENSE.txt file.\n * \n\npackage kotlin.js\nimport
kotlin.internal.LowPriorityInOverloadResolution\n\n/**\n * Exposes the JavaScript [Promise
object](https://developer.mozilla.org/en/docs/Web/JavaScript/Reference/Global_Objects/Promise) to Kotlin.\n * \n\n@Suppress("NOT_DOCUMENTED")\npublic open external class Promise<out T>(executor: (resolve: (T) ->
Unit, reject: (Throwable) -> Unit) -> Unit) {\n     @LowPriorityInOverloadResolution\n     public open fun <S>
then(onFulfilled: ((T) -> S)?): Promise<S>\n     @LowPriorityInOverloadResolution\n     public open fun <S>
then(onFulfilled: ((T) -> S)?, onRejected: ((Throwable) -> S)?): Promise<S>\n     public open fun <S>
catch(onRejected: (Throwable) -> S): Promise<S>\n     companion object {\n         public fun <S> all(promise:
Array<out Promise<S>>): Promise<Array<out S>>\n         public fun <S> race(promise: Array<out
Promise<S>>): Promise<S>\n         public fun reject(e: Throwable): Promise<Nothing>\n         public fun <S>
resolve(e: S): Promise<S>\n         public fun <S> resolve(e: Promise<S>): Promise<S>\n     }\n}\n\n// It's workaround
for KT-19672 since we can fix it properly until KT-11265 isn't fixed.\ninline fun <T, S>
Promise<Promise<T>>.then(\n     noinline onFulfilled: ((T) -> S)?\n): Promise<S> {\n     return
this.unsafeCast<Promise<T>>().then(onFulfilled)\n }\n\ninline fun <T, S> Promise<Promise<T>>.then(\n     noinline
onFulfilled: ((T) -> S)?,\n     noinline onRejected: ((Throwable) -> S)?\n): Promise<S> {\n     return
this.unsafeCast<Promise<T>>().then(onFulfilled, onRejected)\n }\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o.
and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license
that can be found in the license/LICENSE.txt file.\n * \n\npackage kotlin.random\nimport

```

```

kotlin.math.pow\n\ninternal actual fun defaultPlatformRandom(): Random =\n    Random(js("(Math.random() *
Math.pow(2, 32)) | 0").unsafeCast<Int>())\n\n\nprivate val INV_2_26: Double = 2.0.pow(-26)\n\nprivate val
INV_2_53: Double = 2.0.pow(-53)\n\ninternal actual fun doubleFromParts(hi26: Int, low27: Int): Double =\n    hi26 *
INV_2_26 + low27 * INV_2_53", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\npackage kotlin.js\n\nimport getKClass\nimport kotlin.reflect.KClass\nimport
kotlin.reflect.js.internal.KClassImpl\n\n/**\n * Represents the constructor of a class. Instances of `JsClass` can be
passed to JavaScript APIs that expect a constructor reference.\n */\n\nexternal interface JsClass<T : Any> {\n    /**\n     * Returns the unqualified name of the class represented by this instance.\n     */\n    val name:
String\n}\n\n@Deprecated("Use class literal and extension property `js` instead.", replaceWith =
ReplaceWith("T::class.js"), level = DeprecationLevel.ERROR)\n\nexternal fun <T : Any> jsClass():
JsClass<T>\n\n@Deprecated("Use class literal and extension property `js` instead.", replaceWith =
ReplaceWith("this::class.js"), level = DeprecationLevel.ERROR)\n\nval <T : Any> T.jsClass: JsClass<T>\n    get()
= when (jsTypeOf(this)) {\n        "string" -> js("String")\n        "number" -> js("Number")\n        "boolean" ->
js("Boolean")\n        else -> js("Object").getPrototypeOf(this).constructor\n    }\n\n/**\n * Obtains a constructor
reference for the given `KClass`.\n */\n\nval <T : Any> KClass<T>.js: JsClass<T>\n    get() = (this as
KClassImpl<T>).jClass\n\n/**\n * Obtains a `KClass` instance for the given constructor reference.\n */\n\nval <T :
Any> JsClass<T>.kotlin: KClass<T>\n    get() = getKClass(this)\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o.
and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license
that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.reflect.js.internal\n\nimport
kotlin.reflect.*\n\ninternal abstract class KClassImpl<T : Any>(\n    internal open val jClass: JsClass<T>\n) :
KClass<T> {\n    override val annotations: List<Annotation>\n        get() = TODO()\n    override val constructors:
Collection<KFunction<T>>\n        get() = TODO()\n    override val isAbstract: Boolean\n        get() = TODO()\n
    override val isCompanion: Boolean\n        get() = TODO()\n    override val isData: Boolean\n        get() =
TODO()\n    override val isFinal: Boolean\n        get() = TODO()\n    override val isInner: Boolean\n        get() =
TODO()\n    override val isOpen: Boolean\n        get() = TODO()\n    override val isSealed: Boolean\n        get() =
TODO()\n    override val members: Collection<KCallable<*>>\n        get() = TODO()\n    override val nestedClasses:
Collection<KClass<*>>\n        get() = TODO()\n    override val objectInstance: T?\n        get() = TODO()\n
    override val qualifiedName: String?\n        get() = TODO()\n    override val supertypes: List<KType>\n        get() =
TODO()\n    override val typeParameters: List<KTypeParameter>\n        get() = TODO()\n    override val
sealedSubclasses: List<KClass<out T>>\n        get() = TODO()\n    override val visibility: KVisibility?\n        get() =
TODO()\n\n    override fun equals(other: Any?): Boolean {\n        return other is KClassImpl<*> && jClass ==
other.jClass\n    }\n\n    // TODO: use FQN\n    override fun hashCode(): Int = simpleName?.hashCode() ?: 0\n\n
    override fun toString(): String {\n        // TODO: use FQN\n        return "class $simpleName"\n    }\n}\n\ninternal
class SimpleKClassImpl<T : Any>(jClass: JsClass<T>) : KClassImpl<T>(jClass) {\n    override val simpleName:
String? = jClass.asDynamic().`$metadata$`.simpleName.unsafeCast<String?>()\n\n    override fun
isInstance(value: Any?): Boolean {\n        return jsIsType(value, jClass)\n    }\n}\n\ninternal class
PrimitiveKClassImpl<T : Any>(\n    jClass: JsClass<T>,\n    private val givenSimpleName: String,\n    private val
isInstanceFunction: (Any?) -> Boolean\n) : KClassImpl<T>(jClass) {\n    override fun equals(other: Any?): Boolean
{\n        if (other !is PrimitiveKClassImpl<*>) return false\n        return super.equals(other) && givenSimpleName
== other.givenSimpleName\n    }\n\n    override val simpleName: String? get() = givenSimpleName\n\n    override
fun isInstance(value: Any?): Boolean {\n        return isInstanceFunction(value)\n    }\n}\n\ninternal object
NothingKClassImpl : KClassImpl<Nothing>(js("Object")) {\n    override val simpleName: String =
"Nothing"\n\n    override fun isInstance(value: Any?): Boolean = false\n\n    override val jClass:
JsClass<Nothing>\n        get() = throw UnsupportedOperationException("There's no native JS class for Nothing
type")\n\n    override fun equals(other: Any?): Boolean = other === this\n\n    override fun hashCode(): Int =
0\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this
source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\n// a

```

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package is omitted to get declarations directly under the module\n\n// TODO: Remove once
JsReflectionAPICallChecker supports more reflection types\n@file:Suppress("Unsupported")\n\nimport
kotlin.reflect.*\nimport kotlin.reflect.js.internal.*\n\n@JsName("createKType")\n\ninternal fun createKType(\n
classifier: KClassifier,\n arguments: Array<KTypeProjection>,\n isMarkedNullable: Boolean)\n =\n
KTypeImpl(classifier, arguments.asList(), isMarkedNullable)\n\n@JsName("createDynamicKType")\n\ninternal fun
createDynamicKType(): KType = DynamicKType\n\n@JsName("markKTypeNullable")\n\ninternal fun
markKTypeNullable(kType: KType) = KTypeImpl(kType.classifier!!, kType.arguments,
true)\n\n@JsName("createKTypeParameter")\n\ninternal fun createKTypeParameter(\n name: String,\n
upperBounds: Array<KType>,\n variance: String)\n: KTypeParameter {\n val kVariance = when (variance) {\n
"in" -> KVariance.IN\n "out" -> KVariance.OUT\n else -> KVariance.INVARIANT\n }\n\n return
KTypeParameterImpl(name, upperBounds.asList(), kVariance,
false)\n}\n\n@JsName("getStarKTypeProjection")\n\ninternal fun getStarKTypeProjection(): KTypeProjection =\n
KTypeProjection.STAR\n\n@JsName("createCovariantKTypeProjection")\n\ninternal fun
createCovariantKTypeProjection(type: KType): KTypeProjection =\n
KTypeProjection.covariant(type)\n\n@JsName("createInvariantKTypeProjection")\n\ninternal fun
createInvariantKTypeProjection(type: KType): KTypeProjection =\n
KTypeProjection.invariant(type)\n\n@JsName("createContravariantKTypeProjection")\n\ninternal fun
createContravariantKTypeProjection(type: KType): KTypeProjection =\n
KTypeProjection.contravariant(type)\n", /*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming
Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\npackage kotlin.reflect.js.internal\n\nimport kotlin.reflect.*\n\ninternal class
KTypeImpl(\n override val classifier: KClassifier,\n override val arguments: List<KTypeProjection>,\n
override val isMarkedNullable: Boolean)\n : KType {\n override val annotations: List<Annotation>\n get() =
emptyList()\n\n override fun equals(other: Any?): Boolean =\n other is KTypeImpl &&\n classifier
== other.classifier && arguments == other.arguments && isMarkedNullable == other.isMarkedNullable\n\n
override fun hashCode(): Int =\n (classifier.hashCode() * 31 + arguments.hashCode()) * 31 +
isMarkedNullable.hashCode()\n\n override fun toString(): String {\n val kClass = (classifier as? KClass<*>)\n
val classifierName = when {\n kClass == null -> classifier.toString()\n kClass.simpleName != null
-> kClass.simpleName\n else -> "(non-denotable type)" }\n\n val args =\n if
(arguments.isEmpty()) ""\n else arguments.joinToString(", ", "<", ">") { it.asString() }\n\n val
nullable = if (isMarkedNullable) "?"\n else ""\n\n return classifierName + args + nullable\n }\n\n // TODO:
this should be the implementation of KTypeProjection.toString, see KT-30071\n private fun
KTypeProjection.asString(): String {\n if (variance == null) return ""\n return variance.prefixString() +
type.toString()\n }\n}\n\ninternal object DynamicKType : KType {\n override val classifier: KClassifier? =
null\n override val arguments: List<KTypeProjection> = emptyList()\n override val isMarkedNullable: Boolean
= false\n override val annotations: List<Annotation> = emptyList()\n override fun toString(): String =
"dynamic"\n}\n\ninternal fun KVariance.prefixString() =\n when (this) {\n KVariance.INVARIANT ->
""\n KVariance.IN -> "in"\n KVariance.OUT -> "out"\n }\n", /*\n * Copyright 2010-2019 JetBrains
s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0
license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.reflect.js.internal\n\nimport
kotlin.reflect.*\n\ninternal data class KTypeParameterImpl(\n override val name: String,\n override val
upperBounds: List<KType>,\n override val variance: KVariance,\n override val isReified: Boolean)\n :
KTypeParameter {\n override fun toString(): String = name\n}, /*\n * Copyright 2010-2018 JetBrains s.r.o. and
Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that
can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.reflect.js.internal\n\nimport
kotlin.js.JsClass\n\n@JsName("PrimitiveClasses")\n\ninternal object PrimitiveClasses {\n
@JsName("anyClass")\n val anyClass = PrimitiveKClassImpl(js("Object").unsafeCast<JsClass<Any>>(),
"Any", { it is Any })\n\n @JsName("numberClass")\n val numberClass =

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PrimitiveKClassImpl(js("Number").unsafeCast<JsClass<Number>>(), "Number", { it is Number })\n\n
@JsName("nothingClass")\n val nothingClass = NothingKClassImpl\n\n @JsName("booleanClass")\n val
booleanClass = PrimitiveKClassImpl(js("Boolean").unsafeCast<JsClass<Boolean>>(), "Boolean", { it is Boolean
})\n\n @JsName("byteClass")\n val byteClass =
PrimitiveKClassImpl(js("Number").unsafeCast<JsClass<Byte>>(), "Byte", { it is Byte })\n\n
@JsName("shortClass")\n val shortClass = PrimitiveKClassImpl(js("Number").unsafeCast<JsClass<Short>>(),
"Short", { it is Short })\n\n @JsName("intClass")\n val intClass =
PrimitiveKClassImpl(js("Number").unsafeCast<JsClass<Int>>(), "Int", { it is Int })\n\n
@JsName("floatClass")\n val floatClass = PrimitiveKClassImpl(js("Number").unsafeCast<JsClass<Float>>(),
"Float", { it is Float })\n\n @JsName("doubleClass")\n val doubleClass =
PrimitiveKClassImpl(js("Number").unsafeCast<JsClass<Double>>(), "Double", { it is Double })\n\n
@JsName("arrayClass")\n val arrayClass =
PrimitiveKClassImpl(js("Array").unsafeCast<JsClass<Array<*>>>(), "Array", { it is Array<*> })\n\n
@JsName("stringClass")\n val stringClass = PrimitiveKClassImpl(js("String").unsafeCast<JsClass<String>>(),
"String", { it is String })\n\n @JsName("throwableClass")\n val throwableClass =
PrimitiveKClassImpl(js("Error").unsafeCast<JsClass<Throwable>>(), "Throwable", { it is Throwable })\n\n
@JsName("booleanArrayClass")\n val booleanArrayClass =
PrimitiveKClassImpl(js("Array").unsafeCast<JsClass<BooleanArray>>(), "BooleanArray", { it is BooleanArray
})\n\n @JsName("charArrayClass")\n val charArrayClass =
PrimitiveKClassImpl(js("Uint16Array").unsafeCast<JsClass<CharArray>>(), "CharArray", { it is CharArray
})\n\n @JsName("byteArrayClass")\n val byteArrayClass =
PrimitiveKClassImpl(js("Int8Array").unsafeCast<JsClass<ByteArray>>(), "ByteArray", { it is ByteArray })\n\n
@JsName("shortArrayClass")\n val shortArrayClass =
PrimitiveKClassImpl(js("Int16Array").unsafeCast<JsClass<ShortArray>>(), "ShortArray", { it is ShortArray
})\n\n @JsName("intArrayClass")\n val intArrayClass =
PrimitiveKClassImpl(js("Int32Array").unsafeCast<JsClass<IntArray>>(), "IntArray", { it is IntArray })\n\n
@JsName("longArrayClass")\n val longArrayClass =
PrimitiveKClassImpl(js("Array").unsafeCast<JsClass<LongArray>>(), "LongArray", { it is LongArray })\n\n
@JsName("floatArrayClass")\n val floatArrayClass =
PrimitiveKClassImpl(js("Float32Array").unsafeCast<JsClass<FloatArray>>(), "FloatArray", { it is FloatArray
})\n\n @JsName("doubleArrayClass")\n val doubleArrayClass =
PrimitiveKClassImpl(js("Float64Array").unsafeCast<JsClass<DoubleArray>>(), "DoubleArray", { it is
DoubleArray })\n\n @JsName("functionClass")\n fun functionClass(arity: Int): KClassImpl<Any> {\n
return functionClasses.get(arity) ?: run {\n val result =
PrimitiveKClassImpl(js("Function").unsafeCast<JsClass<Any>>(), "Function$arity",\n
{ jsTypeOf(it) === "function" && it.asDynamic().length === arity })\n functionClasses.asDynamic()[arity]
= result\n result\n })\n }\n\nprivate val functionClasses =
arrayOfNulls<KClassImpl<Any>>(0), "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming
Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\n// a package is omitted to get declarations directly under the module\n\nimport
kotlin.reflect.*\nimport kotlin.reflect.js.internal.*\n\n@JsName("getKClass")\ninternal fun <T : Any>
getKClass(jClass: JsClass<T>): KClass<T> =
getOrCreateKClass(jClass)\n\n@JsName("getKClassFromExpression")\ninternal fun <T : Any>
getKClassFromExpression(e: T): KClass<T> =\n when (jsTypeOf(e)) {\n "string" ->
PrimitiveClasses.stringClass\n "number" -> if (jsBitwiseOr(e, 0).asDynamic() === e)
PrimitiveClasses.intClass else PrimitiveClasses.doubleClass\n "boolean" -> PrimitiveClasses.booleanClass\n
"function" -> PrimitiveClasses.functionClass(e.asDynamic().length)\n else -> {\n when {\n e
is BooleanArray -> PrimitiveClasses.booleanArrayClass\n e is CharArray ->

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PrimitiveClasses.charArrayClass\n      e is ByteArray -> PrimitiveClasses.byteArrayClass\n      e is
ShortArray -> PrimitiveClasses.shortArrayClass\n      e is IntArray -> PrimitiveClasses.intArrayClass\n
  e is LongArray -> PrimitiveClasses.longArrayClass\n      e is FloatArray ->
PrimitiveClasses.floatArrayClass\n      e is DoubleArray -> PrimitiveClasses.doubleArrayClass\n      e is
KClass<*> -> KClass::class\n      e is Array<*> -> PrimitiveClasses.arrayClass\n      else -> {\n
  val constructor = js(\"Object\").getPrototypeOf(e).constructor\n      when {\n      constructor
=== js(\"Object\") -> PrimitiveClasses.anyClass\n      constructor === js(\"Error\") ->
PrimitiveClasses.throwableClass\n      else -> {\n      val jsClass: JsClass<T> =
constructor\n      getOrCreateKClass(jsClass)\n      }\n      }\n      }\n
}\n  }\n }.unsafeCast<KClass<T>>()\n\nprivate fun <T : Any> getOrCreateKClass(jClass: JsClass<T>):
KClass<T> {\n  if (jClass === js(\"String\")) return PrimitiveClasses.stringClass.unsafeCast<KClass<T>>()\n\n
val metadata = jClass.asDynamic().`$metadata$\` \n\n return if (metadata != null) {\n  if (metadata.`$kClass$\`
== null) {\n    val kClass = SimpleKClassImpl(jClass)\n    metadata.`$kClass$\` = kClass\n    kClass\n
  } else {\n    metadata.`$kClass$\` \n    } \n } else {\n  SimpleKClassImpl(jClass)\n }\n}\n\n" /*\n *
Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is
governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage
kotlin.js\n\n/*\n * Exposes the JavaScript [RegExp
object](https://developer.mozilla.org/en/docs/Web/JavaScript/Reference/Global_Objects/RegExp) to Kotlin.\n
*\n * @Suppress(\"NOT_DOCUMENTED\")\n\npublic external class RegExp(pattern: String, flags: String? =
definedExternally) {\n\n  public fun test(str: String): Boolean\n\n  public fun exec(str: String): RegExpMatch?\n\n
  public override fun toString(): String\n\n  /*\n   * The lastIndex is a read/write integer property of regular
expressions that specifies the index at which to start the next match.\n   */\n  public var lastIndex: Int\n\n  public
val global: Boolean\n  public val ignoreCase: Boolean\n  public val multiline: Boolean\n}\n\n/*\n * Resets the
regular expression so that subsequent [RegExp.test] and [RegExp.exec] calls will match starting with the beginning
of the input string.\n */\n\npublic fun RegExp.reset() {\n  lastIndex = 0\n}\n\n// TODO: Inherit from array or
introduce asArray() extension\n\n/*\n * Represents the return value of [RegExp.exec].\n
*\n * @Suppress(\"NOT_DOCUMENTED\")\n\npublic external interface RegExpMatch {\n  public val index: Int\n
  public val input: String\n  public val length: Int\n}\n\n/*\n * Returns the entire text matched by [RegExp.exec] if
the [index] parameter is 0, or the text matched by the capturing parenthesis\n * at the given index.\n */\n\npublic inline
operator fun RegExpMatch.get(index: Int): String? = asDynamic()[index]\n\n/*\n * Converts the result of
[RegExp.exec] to an array where the first element contains the entire matched text and each subsequent\n * element
is the text matched by each capturing parenthesis.\n */\n\npublic inline fun RegExpMatch.asArray(): Array<out
String?> = unsafeCast<Array<out String?>>()\n\n" /*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin
Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be
found in the license/LICENSE.txt file.\n */\n\npackage kotlin.sequences\n\ninternal actual class
ConstrainedOnceSequence<T> actual constructor(sequence: Sequence<T>) : Sequence<T> {\n  private var
sequenceRef: Sequence<T>? = sequence\n\n  actual override fun iterator(): Iterator<T> {\n    val sequence =
sequenceRef ?: throw IllegalStateException(\"This sequence can be consumed only once.\")\n    sequenceRef =
null\n    return sequence.iterator()\n  }\n}\n\n" /*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin
Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be
found in the license/LICENSE.txt file.\n */\n\npackage kotlin.text\n\n/*\n * The exception thrown when a
character encoding or decoding error occurs.\n */\n * @SinceKotlin("1.3")\n * @ExperimentalStdlibApi\n\npublic actual
open class CharacterCodingException(message: String?) : Exception(message) {\n  actual constructor() :
this(null)\n}\n\n" /*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.\n *
Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*/\n\npackage kotlin.text\n\n/*\n * A mutable sequence of characters.\n * String builder can be used to
efficiently perform multiple string manipulation operations.\n */\n\npublic actual class StringBuilder actual
constructor(content: String) : Appendable, CharSequence {\n  /*\n   * Constructs an empty string builder with

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the specified initial [capacity].\n * In Kotlin/JS implementation of StringBuilder the initial capacity has no
effect on the further performance of operations.\n */\n actual constructor(capacity: Int) : this() {\n
this.asDynamic()._capacity = capacity\n }\n\n /** Constructs a string builder that contains the same characters as
the specified [content] char sequence. */\n actual constructor(content: CharSequence) : this(content.toString())
{\n\n /** Constructs an empty string builder. */\n actual constructor() : this(\"\")\n\n private var string: String
= if (content !== undefined) content else \"\"\n\n actual override val length: Int\n get() =
string.asDynamic().length\n\n actual override fun get(index: Int): Char =\n string.getOrElse(index) { throw
IndexOutOfBoundsException("index: $index, length: $length}") }\n\n actual override fun
subSequence(startIndex: Int, endIndex: Int): CharSequence = string.substring(startIndex, endIndex)\n\n actual
override fun append(value: Char): StringBuilder {\n string += value\n return this\n }\n\n actual override
fun append(value: CharSequence?): StringBuilder {\n string += value.toString()\n return this\n }\n\n
@UseExperimental(ExperimentalStdlibApi::class)\n actual override fun append(value: CharSequence?,
startIndex: Int, endIndex: Int): StringBuilder = this.appendRange(value, startIndex, endIndex)\n\n /**\n *
Reverses the contents of this string builder and returns this instance.\n * Surrogate pairs included in this
string builder are treated as single characters.\n * Therefore, the order of the high-low surrogates is never
reversed.\n * Note that the reverse operation may produce new surrogate pairs that were unpaired low-
surrogates and high-surrogates before the operation.\n * For example, reversing `"\uDC00uD800"` produces
`"\uD800\uDC00"` which is a valid surrogate pair.\n */\n actual fun reverse(): StringBuilder {\n var
reversed = \"\"\n var index = string.length - 1\n while (index >= 0) {\n val low = string[index--]\n
if (low.isLowSurrogate() && index >= 0) {\n val high = string[index--]\n if
(high.isHighSurrogate()) {\n reversed = reversed + high + low\n } else {\n reversed
= reversed + low + high\n } else {\n reversed += low\n }\n }\n string =
reversed\n return this\n }\n\n /**\n * Appends the string representation of the specified object [value] to
this string builder and returns this instance.\n * The overall effect is exactly as if the [value] were converted
to a string by the `value.toString()` method,\n * and then that string was appended to this string builder.\n */\n
actual fun append(value: Any?): StringBuilder {\n string += value.toString()\n return this\n }\n\n /**\n *
Appends the string representation of the specified boolean [value] to this string builder and returns this instance.\n
* The overall effect is exactly as if the [value] were converted to a string by the `value.toString()` method,\n
* and then that string was appended to this string builder.\n */\n @SinceKotlin("1.3")\n//
@ExperimentalStdlibApi\n actual fun append(value: Boolean): StringBuilder {\n string += value\n return
this\n }\n\n /**\n * Appends characters in the specified character array [value] to this string builder and
returns this instance.\n * Characters are appended in order, starting at the index 0.\n */\n
@SinceKotlin("1.3")\n @ExperimentalStdlibApi\n actual fun append(value: CharArray): StringBuilder {\n
string += value.concatToString()\n return this\n }\n\n /**\n * Appends the specified string [value] to this
string builder and returns this instance.\n */\n @SinceKotlin("1.3")\n// @ExperimentalStdlibApi\n actual
fun append(value: String): StringBuilder {\n this.string += value\n return this\n }\n\n /**\n * Returns
the current capacity of this string builder.\n * The capacity is the maximum length this string builder can
have before an allocation occurs.\n * In Kotlin/JS implementation of StringBuilder the value returned from
this method may not indicate the actual size of the backing storage.\n */\n @SinceKotlin("1.3")\n
@ExperimentalStdlibApi\n actual fun capacity(): Int = if (this.asDynamic()._capacity !== undefined)
maxOf(this.asDynamic()._capacity, length) else length\n\n /**\n * Ensures that the capacity of this string
builder is at least equal to the specified [minimumCapacity].\n * If the current capacity is less than the
[minimumCapacity], a new backing storage is allocated with greater capacity.\n * Otherwise, this method takes
no action and simply returns.\n * In Kotlin/JS implementation of StringBuilder the size of the backing
storage is not extended to comply the given [minimumCapacity],\n * thus calling this method has no effect on the
further performance of operations.\n */\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n actual fun
ensureCapacity(minimumCapacity: Int) {\n if (minimumCapacity > capacity()) {\n
this.asDynamic()._capacity = minimumCapacity\n }\n }\n\n /**\n * Returns the index within this string

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builder of the first occurrence of the specified [string].\n * Returns -1 if the specified [string] does not
occur in this string builder.\n *^n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n actual fun
indexOf(string: String): Int = this.string.asDynamic().indexOf(string)\n\n /**\n * Returns the index within this
string builder of the first occurrence of the specified [string],\n * starting at the specified [startIndex].\n *
Returns -1 if the specified [string] does not occur in this string builder starting at the specified [startIndex].\n
*^n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n actual fun indexOf(string: String, startIndex: Int): Int
= this.string.asDynamic().indexOf(string, startIndex)\n\n /**\n * Returns the index within this string builder of
the last occurrence of the specified [string].\n * The last occurrence of empty string `` is considered to be at the
index equal to `this.length`.\n * Returns -1 if the specified [string] does not occur in this string builder.\n
*^n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n actual fun lastIndexOf(string: String): Int =
this.string.asDynamic().lastIndexOf(string)\n\n /**\n * Returns the index within this string builder of the last
occurrence of the specified [string],\n * starting from the specified [startIndex] toward the beginning.\n *
Returns -1 if the specified [string] does not occur in this string builder starting at the specified [startIndex].\n
*^n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n actual fun lastIndexOf(string: String, startIndex: Int):
Int {\n    if (string.isEmpty() && startIndex < 0) return -1\n    return this.string.asDynamic().lastIndexOf(string,
startIndex)\n } \n\n /**\n * Inserts the string representation of the specified boolean [value] into this string
builder at the specified [index] and returns this instance.\n * The overall effect is exactly as if the [value]
were converted to a string by the `value.toString()` method,\n * and then that string was inserted into this string
builder at the specified [index].\n * @throws IndexOutOfBoundsException if [index] is less than zero or
greater than the length of this string builder.\n *^n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n
actual fun insert(index: Int, value: Boolean): StringBuilder {\n    AbstractList.checkPositionIndex(index,
length)\n\n    string = string.substring(0, index) + value + string.substring(index)\n    return this\n } \n\n
/**\n * Inserts the specified character [value] into this string builder at the specified [index] and returns this
instance.\n * @throws IndexOutOfBoundsException if [index] is less than zero or greater than the length of
this string builder.\n *^n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n actual fun insert(index: Int,
value: Char): StringBuilder {\n    AbstractList.checkPositionIndex(index, length)\n\n    string =
string.substring(0, index) + value + string.substring(index)\n    return this\n } \n\n /**\n * Inserts characters
in the specified character array [value] into this string builder at the specified [index] and returns this instance.\n
* The inserted characters go in same order as in the [value] character array, starting at [index].\n *
@throws IndexOutOfBoundsException if [index] is less than zero or greater than the length of this string builder.\n
*^n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n actual fun insert(index: Int, value: CharArray):
StringBuilder {\n    AbstractList.checkPositionIndex(index, length)\n\n    string = string.substring(0, index) +
value.concatToString() + string.substring(index)\n    return this\n } \n\n /**\n * Inserts characters in the
specified character sequence [value] into this string builder at the specified [index] and returns this instance.\n
* The inserted characters go in the same order as in the [value] character sequence, starting at [index].\n *
@param index the position in this string builder to insert at.\n * @param value the character sequence from which
characters are inserted. If [value] is `null`, then the four characters `` are inserted.\n * @throws
IndexOutOfBoundsException if [index] is less than zero or greater than the length of this string builder.\n *^n
@SinceKotlin("1.3")\n @ExperimentalStdlibApi\n actual fun insert(index: Int, value: CharSequence?):
StringBuilder {\n    AbstractList.checkPositionIndex(index, length)\n\n    string = string.substring(0, index) +
value.toString() + string.substring(index)\n    return this\n } \n\n /**\n * Inserts the string representation of
the specified object [value] into this string builder at the specified [index] and returns this instance.\n * The
overall effect is exactly as if the [value] were converted to a string by the `value.toString()` method,\n * and then
that string was inserted into this string builder at the specified [index].\n * @throws
IndexOutOfBoundsException if [index] is less than zero or greater than the length of this string builder.\n *^n
@SinceKotlin("1.3")\n @ExperimentalStdlibApi\n actual fun insert(index: Int, value: Any?): StringBuilder {\n
    AbstractList.checkPositionIndex(index, length)\n\n    string = string.substring(0, index) + value.toString() +
string.substring(index)\n    return this\n } \n\n /**\n * Inserts the string [value] into this string builder at the

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specified [index] and returns this instance.\n * \n * @throws IndexOutOfBoundsException if [index] is less than
zero or greater than the length of this string builder.\n * \n @SinceKotlin("1.3")\n
@ExperimentalStdlibApi\n actual fun insert(index: Int, value: String): StringBuilder {\n
AbstractList.checkPositionIndex(index, length)\n\n this.string = this.string.substring(0, index) + value +
this.string.substring(index)\n return this\n }\n\n /** \n * Sets the length of this string builder to the
specified [newLength].\n * \n * If the [newLength] is less than the current length, it is changed to the specified
[newLength].\n * \n * Otherwise, null characters '\u0000' are appended to this string builder until its length is less
than the [newLength].\n * \n * Note that in Kotlin/JS [set] operator function has non-constant execution time
complexity.\n * \n * Therefore, increasing length of this string builder and then updating each character by index may
slow down your program.\n * \n * @throws IndexOutOfBoundsException or [IllegalArgumentException] if
[newLength] is less than zero.\n * \n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n actual fun
setLength(newLength: Int) {\n if (newLength < 0) {\n throw IllegalArgumentException("Negative new
length: $newLength.")\n }\n\n if (newLength <= length) {\n string = string.substring(0,
newLength)\n } else {\n for (i in length until newLength) {\n string += "\u0000"\n }\n
}\n\n }\n\n /** \n * Returns a new [String] that contains characters in this string builder at [startIndex]
(inclusive) and up to the [length] (exclusive).\n * \n * @throws IndexOutOfBoundsException if [startIndex] is
less than zero or greater than the length of this string builder.\n * \n @SinceKotlin("1.3")\n
@ExperimentalStdlibApi\n actual fun substring(startIndex: Int): String {\n
AbstractList.checkPositionIndex(startIndex, length)\n\n return string.substring(startIndex)\n }\n\n /** \n *
Returns a new [String] that contains characters in this string builder at [startIndex] (inclusive) and up to the
[endIndex] (exclusive).\n * \n * @throws IndexOutOfBoundsException or [IllegalArgumentException] when
[startIndex] or [endIndex] is out of range of this string builder indices or when `startIndex > endIndex`.\n * \n
@SinceKotlin("1.3")\n @ExperimentalStdlibApi\n actual fun substring(startIndex: Int, endIndex: Int): String
{\n AbstractList.checkBoundsIndexes(startIndex, endIndex, length)\n\n return string.substring(startIndex,
endIndex)\n }\n\n /** \n * Attempts to reduce storage used for this string builder.\n * \n * If the backing
storage of this string builder is larger than necessary to hold its current contents,\n * then it may be resized to
become more space efficient.\n * \n * Calling this method may, but is not required to, affect the value of the [capacity]
property.\n * \n * In Kotlin/JS implementation of String Builder the size of the backing storage is always equal
to the length of the string builder.\n * \n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n actual fun
trimToSize() {\n if (this.asDynamic()._capacity !== undefined) {\n this.asDynamic()._capacity =
length\n }\n }\n\n override fun toString(): String = string\n\n /** \n * Clears the content of this string
builder making it empty and returns this instance.\n * \n * @sample samples.text.Strings.clearStringBuilder\n
*\n @SinceKotlin("1.3")\n public fun clear(): String Builder {\n string = ""\n return this\n }\n\n
/** \n * Sets the character at the specified [index] to the specified [value].\n * \n * @throws
IndexOutOfBoundsException if [index] is out of bounds of this string builder.\n * \n @SinceKotlin("1.3")\n
@ExperimentalStdlibApi\n public operator fun set(index: Int, value: Char) {\n
AbstractList.checkElementIndex(index, length)\n\n string = string.substring(0, index) + value +
string.substring(index + 1)\n }\n\n /** \n * Replaces characters in the specified range of this string builder with
characters in the specified string [value] and returns this instance.\n * \n * @param startIndex the beginning
(inclusive) of the range to replace.\n * \n * @param endIndex the end (exclusive) of the range to replace.\n * \n
*\n * @param value the string to replace with.\n * \n * @throws IndexOutOfBoundsException or
[IllegalArgumentException] if [startIndex] is less than zero, greater than the length of this string builder, or
`startIndex > endIndex`.\n * \n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n public fun
setRange(startIndex: Int, endIndex: Int, value: String): String Builder {\n checkReplaceRange(startIndex,
endIndex, length)\n\n this.string = this.string.substring(0, startIndex) + value + this.string.substring(endIndex)\n
return this\n }\n\n private fun checkReplaceRange(startIndex: Int, endIndex: Int, length: Int) {\n if
(startIndex < 0 || startIndex > length) {\n throw IndexOutOfBoundsException("startIndex: $startIndex,
length: $length")\n }\n\n if (startIndex > endIndex) {\n throw

```

```

IllegalArgumentException("startIndex($startIndex) > endIndex($endIndex)")\n    }\n }\n\n /**\n *
Removes the character at the specified [index] from this string builder and returns this instance.\n *\n * If the
`Char` at the specified [index] is part of a supplementary code point, this method does not remove the entire
supplementary character.\n *\n * @param index the index of `Char` to remove.\n *\n * @throws
IndexOutOfBoundsException if [index] is out of bounds of this string builder.\n *\n @SinceKotlin("1.3")\n
@ExperimentalStdlibApi\n public fun deleteAt(index: Int): StringBuilder {\n
AbstractList.checkElementIndex(index, length)\n\n string = string.substring(0, index) + string.substring(index +
1)\n return this\n }\n\n /**\n * Removes characters in the specified range from this string builder and
returns this instance.\n *\n * @param startIndex the beginning (inclusive) of the range to remove.\n *
@param endIndex the end (exclusive) of the range to remove.\n *\n * @throws IndexOutOfBoundsException
or [IllegalArgumentException] when [startIndex] is out of range of this string builder indices or when `startIndex >
endIndex`.\n *\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n public fun deleteRange(startIndex:
Int, endIndex: Int): StringBuilder {\n checkReplaceRange(startIndex, endIndex, length)\n\n string =
string.substring(0, startIndex) + string.substring(endIndex)\n return this\n }\n\n /**\n * Copies characters
from this string builder into the [destination] character array.\n *\n * @param destination the array to copy to.\n
* @param destinationOffset the position in the array to copy to, 0 by default.\n * @param startIndex the
beginning (inclusive) of the range to copy, 0 by default.\n * @param endIndex the end (exclusive) of the range to
copy, length of this string builder by default.\n *\n * @throws IndexOutOfBoundsException or
[IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this string builder indices or when
`startIndex > endIndex`.\n * @throws IndexOutOfBoundsException when the subrange doesn't fit into the
[destination] array starting at the specified [destinationOffset],\n * or when that index is out of the [destination]
array indices range.\n *\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n public fun
toCharArray(destination: CharArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = this.length) {\n
AbstractList.checkBoundsIndexes(startIndex, endIndex, length)\n
AbstractList.checkBoundsIndexes(destinationOffset, destinationOffset + endIndex - startIndex, destination.size)\n\n
var dstIndex = destinationOffset\n for (index in startIndex until endIndex) {\n destination[dstIndex++]
= string[index]\n }\n }\n\n /**\n * Appends characters in a subarray of the specified character array
[value] to this string builder and returns this instance.\n *\n * Characters are appended in order, starting at
specified [startIndex].\n *\n * @param value the array from which characters are appended.\n * @param
startIndex the beginning (inclusive) of the subarray to append.\n * @param endIndex the end (exclusive) of the
subarray to append.\n *\n * @throws IndexOutOfBoundsException or [IllegalArgumentException] when
[startIndex] or [endIndex] is out of range of the [value] array indices or when `startIndex > endIndex`.\n *\n
@SinceKotlin("1.3")\n @ExperimentalStdlibApi\n public fun appendRange(value: CharArray, startIndex: Int,
endIndex: Int): StringBuilder {\n string += value.concatToString(startIndex, endIndex)\n return this\n
}\n\n /**\n * Appends a subsequence of the specified character sequence [value] to this string builder and
returns this instance.\n *\n * @param value the character sequence from which a subsequence is appended. If
[value] is `null`,\n * then characters are appended as if [value] contained the four characters `"\u0000"`. \n *
@param startIndex the beginning (inclusive) of the subsequence to append.\n * @param endIndex the end
(exclusive) of the subsequence to append.\n *\n * @throws IndexOutOfBoundsException or
[IllegalArgumentException] when [startIndex] or [endIndex] is out of range of the [value] character sequence
indices or when `startIndex > endIndex`.\n *\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n public
fun appendRange(value: CharSequence?, startIndex: Int, endIndex: Int): StringBuilder {\n val stringCsq =
value.toString()\n AbstractList.checkBoundsIndexes(startIndex, endIndex, stringCsq.length)\n\n string +=
stringCsq.substring(startIndex, endIndex)\n return this\n }\n\n /**\n * Inserts characters in a subarray of
the specified character array [value] into this string builder at the specified [index] and returns this instance.\n
*\n * The inserted characters go in same order as in the [value] array, starting at [index].\n *\n * @param index
the position in this string builder to insert at.\n * @param value the array from which characters are inserted.\n
* @param startIndex the beginning (inclusive) of the subarray to insert.\n * @param endIndex the end (exclusive)

```

of the subarray to insert.

- \* @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of the [value] array indices or when `startIndex > endIndex`.
- \* @throws IndexOutOfBoundsException if [index] is less than zero or greater than the length of this string builder.

```

*/
@SinceKotlin("1.3")
@ExperimentalStdlibApi
public fun insertRange(index: Int, value: CharArray,
    startIndex: Int, endIndex: Int): String Builder {
    AbstractList.checkPositionIndex(index, this.length)
    string = string.substring(0, index) + value.concatToString(startIndex, endIndex) + string.substring(index)
    return this
}
/**
 * Inserts characters in a subsequence of the specified character sequence [value] into
 * this string builder at the specified [index] and returns this instance.
 *
 * The inserted characters go in the
 * same order as in the [value] character sequence, starting at [index].
 *
 * @param index the position in this
 * string builder to insert at.
 *
 * @param value the character sequence from which a subsequence is inserted. If
 * [value] is `null`,
 * then characters will be inserted as if [value] contained the four characters `"\null"`.
 *
 * @param startIndex the beginning (inclusive) of the subsequence to insert.
 *
 * @param endIndex the end
 * (exclusive) of the subsequence to insert.
 *
 * @throws IndexOutOfBoundsException or
 * [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of the [value] character sequence
 * indices or when `startIndex > endIndex`.
 *
 * @throws IndexOutOfBoundsException if [index] is less than zero or
 * greater than the length of this string builder.
 */
@SinceKotlin("1.3")
@ExperimentalStdlibApi
public fun insertRange(index: Int, value: CharSequence?, startIndex: Int, endIndex: Int): String Builder {
    AbstractList.checkPositionIndex(index, length)
    val stringCsq = value.toString()
    AbstractList.checkBoundsIndexes(startIndex, endIndex, stringCsq.length)
    string = string.substring(0, index)
    + stringCsq.substring(startIndex, endIndex) + string.substring(index)
    return this
}
}
/**
 * Clears
 * the content of this string builder making it empty and returns this instance.
 */
@sample
samples.text.Strings.clearStringBuilder

*/
@SinceKotlin("1.3")
@Suppress("EXTENSION_SHADOWED_BY_MEMBER",
    "NOTHING_TO_INLINE")
public actual inline fun String Builder.clear(): String Builder = this.clear()
/**
 * Sets the character at the specified [index] to the specified [value].
 *
 * @throws IndexOutOfBoundsException if
 * [index] is out of bounds of this string builder.
 */
*/
@SinceKotlin("1.3")
@ExperimentalStdlibApi
@Suppress("EXTENSION_SHADOWED_BY_MEMBER",
    "NOTHING_TO_INLINE")
public actual inline operator fun String Builder.set(index: Int, value: Char) =
    this.set(index, value)
/**
 * Replaces characters in the specified range of this string builder with characters in
 * the specified string [value] and returns this instance.
 *
 * @param startIndex the beginning (inclusive) of the
 * range to replace.
 *
 * @param endIndex the end (exclusive) of the range to replace.
 *
 * @param value the string to
 * replace with.
 *
 * @throws IndexOutOfBoundsException or [IllegalArgumentException] if [startIndex] is less
 * than zero, greater than the length of this string builder, or `startIndex > endIndex`.
 */
*/
@SinceKotlin("1.3")
@ExperimentalStdlibApi
@Suppress("EXTENSION_SHADOWED_BY_MEMBER",
    "NOTHING_TO_INLINE")
public actual inline fun String Builder.setRange(startIndex: Int, endIndex: Int,
    value: String): String Builder =
    this.setRange(startIndex, endIndex, value)
/**
 * Removes the character at
 * the specified [index] from this string builder and returns this instance.
 *
 * If the `Char` at the specified [index] is
 * part of a supplementary code point, this method does not remove the entire supplementary character.
 *
 * @param index the index of `Char` to remove.
 *
 * @throws IndexOutOfBoundsException if [index] is out of
 * bounds of this string builder.
 */
*/
@SinceKotlin("1.3")
@ExperimentalStdlibApi
@Suppress("EXTENSION_SHADOWED_BY_MEMBER",
    "NOTHING_TO_INLINE")
public actual inline fun String Builder.deleteAt(index: Int): String Builder =
    this.deleteAt(index)
/**
 * Removes characters in the specified range from this string builder and returns this
 * instance.
 *
 * @param startIndex the beginning (inclusive) of the range to remove.
 *
 * @param endIndex the end
 * (exclusive) of the range to remove.
 *
 * @throws IndexOutOfBoundsException or [IllegalArgumentException]
 * when [startIndex] is out of range of this string builder indices or when `startIndex > endIndex`.
 */
*/
@SinceKotlin("1.3")
@ExperimentalStdlibApi
@Suppress("EXTENSION_SHADOWED_BY_MEMBER",
    "NOTHING_TO_INLINE")
public actual inline fun String Builder.deleteRange(startIndex: Int, endIndex: Int):

```

StringBuilder = this.deleteRange(startIndex, endIndex)\n\n/\*\*\n \* Copies characters from this string builder into the [destination] character array.\n \* @param destination the array to copy to.\n \* @param destinationOffset the position in the array to copy to, 0 by default.\n \* @param startIndex the beginning (inclusive) of the range to copy, 0 by default.\n \* @param endIndex the end (exclusive) of the range to copy, length of this string builder by default.\n \* @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of this string builder indices or when `startIndex > endIndex`.\n \* @throws IndexOutOfBoundsException when the subrange doesn't fit into the [destination] array starting at the specified [destinationOffset],\n \* or when that index is out of the [destination] array indices range.\n

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@Suppress("EXTENSION_SHADOWED_BY_MEMBER", "NOTHING_TO_INLINE", "ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\npublic actual inline fun StringBuilder.toCharArray(destination: CharArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = this.length) =\n    this.toCharArray(destination, destinationOffset, startIndex, endIndex)\n\n/**\n * Appends characters in a subarray of the specified character array [value] to this string builder and returns this instance.\n * Characters are appended in order, starting at specified [startIndex].\n * @param value the array from which characters are appended.\n * @param startIndex the beginning (inclusive) of the subarray to append.\n * @param endIndex the end (exclusive) of the subarray to append.\n * @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of the [value] array indices or when `startIndex > endIndex`.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@Suppress("EXTENSION_SHADOWED_BY_MEMBER", "NOTHING_TO_INLINE")\npublic actual inline fun StringBuilder.appendRange(value: CharArray, startIndex: Int, endIndex: Int): StringBuilder =\n    this.appendRange(value, startIndex, endIndex)\n\n/**\n * Appends a subsequence of the specified character sequence [value] to this string builder and returns this instance.\n * @param value the character sequence from which a subsequence is appended. If [value] is `null`,\n * then characters are appended as if [value] contained the four characters `\\null`.\n * @param startIndex the beginning (inclusive) of the subsequence to append.\n * @param endIndex the end (exclusive) of the subsequence to append.\n * @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of the [value] character sequence indices or when `startIndex > endIndex`.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@Suppress("EXTENSION_SHADOWED_BY_MEMBER", "NOTHING_TO_INLINE")\npublic actual inline fun StringBuilder.appendRange(value: CharSequence?, startIndex: Int, endIndex: Int): StringBuilder =\n    this.appendRange(value, startIndex, endIndex)\n\n/**\n * Inserts characters in a subarray of the specified character array [value] into this string builder at the specified [index] and returns this instance.\n * The inserted characters go in same order as in the [value] array, starting at [index].\n * @param index the position in this string builder to insert at.\n * @param value the array from which characters are inserted.\n * @param startIndex the beginning (inclusive) of the subarray to insert.\n * @param endIndex the end (exclusive) of the subarray to insert.\n * @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of the [value] array indices or when `startIndex > endIndex`.\n * @throws IndexOutOfBoundsException if [index] is less than zero or greater than the length of this string builder.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@Suppress("EXTENSION_SHADOWED_BY_MEMBER", "NOTHING_TO_INLINE")\npublic actual inline fun StringBuilder.insertRange(index: Int, value: CharArray, startIndex: Int, endIndex: Int): StringBuilder =\n    this.insertRange(index, value, startIndex, endIndex)\n\n/**\n * Inserts characters in a subsequence of the specified character sequence [value] into this string builder at the specified [index] and returns this instance.\n * The inserted characters go in the same order as in the [value] character sequence, starting at [index].\n * @param index the position in this string builder to insert at.\n * @param value the character sequence from which a subsequence is inserted. If [value] is `null`,\n * then characters will be inserted as if [value] contained the four characters `\\null`.\n * @param startIndex the beginning (inclusive) of the subsequence to insert.\n * @param endIndex the end (exclusive) of the subsequence to insert.\n * @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of the
```

```

[value] character sequence indices or when `startIndex > endIndex`.n * @throws IndexOutOfBoundsException if
[index] is less than zero or greater than the length of this string builder.n
*/n@SinceKotlin("1.3")n@ExperimentalStdlibApi\n@Suppress("EXTENSION_SHADOWED_BY_MEMBER\
", "NOTHING_TO_INLINE")npublic actual inline fun StringBuilder.insertRange(index: Int, value:
CharSequence?, startIndex: Int, endIndex: Int): StringBuilder =n    this.insertRange(index, value, startIndex,
endIndex)n", "/*n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.n * Use
of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.n
*/n\npackage kotlin.text\n// actually \s is enough to match all whitespace, but \xA0 added because of different
regex behavior of Rhino used in Selenium tests\npublic actual fun Char.isWhitespace(): Boolean =
toString().matches("[\\s\\xA0]")n\n@kotlin.internal.InlineOnly\npublic actual inline fun Char.toLowerCase():
Char =
js("String.fromCharCode")(toInt()).toLowerCase().charCodeAt(0).unsafeCast<Int>().toChar()\n\n@kotlin.internal.
InlineOnly\npublic actual inline fun Char.toUpperCase(): Char =
js("String.fromCharCode")(toInt()).toUpperCase().charCodeAt(0).unsafeCast<Int>().toChar()\n\n/**n * Returns
`true` if this character is a Unicode high-surrogate code unit (also known as leading-surrogate code unit).n
*/n\npublic actual fun Char.isHighSurrogate(): Boolean = this in
Char.MIN_HIGH_SURROGATE..Char.MAX_HIGH_SURROGATE\n\n/**n * Returns `true` if this character is a
Unicode low-surrogate code unit (also known as trailing-surrogate code unit).n */n\npublic actual fun
Char.isLowSurrogate(): Boolean = this in
Char.MIN_LOW_SURROGATE..Char.MAX_LOW_SURROGATE\n", "/*n * Copyright 2010-2018 JetBrains
s.r.o. and Kotlin Programming Language contributors.n * Use of this source code is governed by the Apache 2.0
license that can be found in the license/LICENSE.txt file.n */n\npackage kotlin.text\n\n/**n * Returns `true` if
the contents of this string is equal to the word `true`, ignoring case, and `false` otherwise.n */n\npublic actual fun
String.toBoolean(): Boolean = toLowerCase() == "true"\n\n/**n * Parses the string as a signed [Byte] number and
returns the result.n * @throws NumberFormatException if the string is not a valid representation of a number.n
*/n\npublic actual fun String.toByte(): Byte = toByteOrNull() ?: numberFormatError(this)\n\n/**n * Parses the string
as a signed [Byte] number and returns the result.n * @throws NumberFormatException if the string is not a valid
representation of a number.n * @throws IllegalArgumentException when [radix] is not a valid radix for string to
number conversion.n */n\npublic actual fun String.toByte(radix: Int): Byte = toByteOrNull(radix) ?:
numberFormatError(this)\n\n/**n * Parses the string as a [Short] number and returns the result.n * @throws
NumberFormatException if the string is not a valid representation of a number.n */n\npublic actual fun
String.toShort(): Short = toShortOrNull() ?: numberFormatError(this)\n\n/**n * Parses the string as a [Short]
number and returns the result.n * @throws NumberFormatException if the string is not a valid representation of a
number.n * @throws IllegalArgumentException when [radix] is not a valid radix for string to number conversion.n
*/n\npublic actual fun String.toShort(radix: Int): Short = toShortOrNull(radix) ?: numberFormatError(this)\n\n/**
Parses the string as an [Int] number and returns the result.n * @throws NumberFormatException if the string is not
a valid representation of a number.n */n\npublic actual fun String.toInt(): Int = toIntOrNull() ?:
numberFormatError(this)\n\n/**n * Parses the string as an [Int] number and returns the result.n * @throws
NumberFormatException if the string is not a valid representation of a number.n * @throws
IllegalArgumentException when [radix] is not a valid radix for string to number conversion.n */n\npublic actual fun
String.toInt(radix: Int): Int = toIntOrNull(radix) ?: numberFormatError(this)\n\n/**n * Parses the string as a [Long]
number and returns the result.n * @throws NumberFormatException if the string is not a valid representation of a
number.n */n\npublic actual fun String.toLong(): Long = toLongOrNull() ?: numberFormatError(this)\n\n/**n *
Parses the string as a [Long] number and returns the result.n * @throws NumberFormatException if the string is not
a valid representation of a number.n * @throws IllegalArgumentException when [radix] is not a valid radix for
string to number conversion.n */n\npublic actual fun String.toLong(radix: Int): Long = toLongOrNull(radix) ?:
numberFormatError(this)\n\n/**n * Parses the string as a [Double] number and returns the result.n * @throws
NumberFormatException if the string is not a valid representation of a number.n */n\npublic actual fun

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String.toDouble(): Double = (+this.asDynamic()).unsafeCast<Double>().also {
    if (it.isNaN() && !this.isNaN() || it == 0.0 && this.isBlank())
        numberFormatError(this)
}
Parses the string as a [Float] number and returns the result.
@throws NumberFormatException if the string is not a valid representation of a number.
@kotlin.internal.InlineOnly
public actual inline fun String.toFloat(): Float =
    toDouble().unsafeCast<Float>()
Parses the string as a [Double] number and returns the result or `null` if the string is not a valid representation of a number.
@kotlin.internal.InlineOnly
public actual inline fun String.toDoubleOrNull(): Double? =
    (+this.asDynamic()).unsafeCast<Double>().takeIf {
        !it.isNaN() && !this.isNaN() || it == 0.0 && this.isBlank()
}
Parses the string as a [Float] number and returns the result or `null` if the string is not a valid representation of a number.
@kotlin.internal.InlineOnly
public actual inline fun String.toFloatOrNull(): Float? = toDoubleOrNull().unsafeCast<Float?>()
Returns a string representation of this [Byte] value in the specified [radix].
@throws IllegalArgumentException when [radix] is not a valid radix for number to string conversion.
@SinceKotlin("1.2")
@kotlin.internal.InlineOnly
public actual inline fun Byte.toString(radix: Int): String = this.toInt().toString(radix)
Returns a string representation of this [Short] value in the specified [radix].
@throws IllegalArgumentException when [radix] is not a valid radix for number to string conversion.
@SinceKotlin("1.2")
@kotlin.internal.InlineOnly
public actual inline fun Short.toString(radix: Int): String = this.toInt().toString(radix)
Returns a string representation of this [Int] value in the specified [radix].
@throws IllegalArgumentException when [radix] is not a valid radix for number to string conversion.
@SinceKotlin("1.2")
public actual fun Int.toString(radix: Int): String = asDynamic().toString(checkRadix(radix))
private fun String.isNaN(): Boolean = when (this.toLowerCase()) {
    "nan", "+nan", "-nan" -> true
    else -> false
}
Checks whether the given [radix] is valid radix for string to number and number to string conversion.
@PublishedApi
internal actual fun checkRadix(radix: Int): Int {
    if (radix !in 2..36)
        throw IllegalArgumentException("radix $radix was not in valid range 2..36")
    return radix
}
internal actual fun digitOf(char: Char, radix: Int): Int = when {
    char >= '0' && char <= '9' -> char - '0'
    char >= 'A' && char <= 'Z' -> char - 'A' + 10
    char >= 'a' && char <= 'z' -> char - 'a' + 10
    else -> -1
}.let { if (it >= radix) -1 else it }
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Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.
package kotlin.text
nimport kotlin.js.RegExp
Provides enumeration values to use to set regular expression options.
@kotlin.internal.InlineOnly
public actual enum class RegexOptions(val value: String) {
    /** Enables case-insensitive matching. */
    IGNORE_CASE("i"),
    /** Enables multiline mode.
     * In multiline mode the expressions `^` and `$` match just after or just before, respectively, a line terminator or the end of the input sequence.
     */
    MULTILINE("m")
}
Represents the results from a single capturing group within a [MatchResult] of [Regex].
@param value The value of captured group.
@kotlin.internal.InlineOnly
public actual data class MatchGroup(actual val value: String)
Represents a compiled regular expression.
Provides functions to match strings in text with a pattern, replace the found occurrences and split text around matches.
For pattern syntax reference see [MDN RegExp](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/RegExp#Special_characters_meaning_in_regular_expressions) and
[http://www.w3schools.com/jsref/jsref_obj_regexp.asp](http://www.w3schools.com/jsref/jsref_obj_regexp.asp).
@constructor Creates a regular expression from the specified [pattern] string and the specified set of [options].
@kotlin.internal.InlineOnly
public actual class Regex actual constructor(pattern: String, options: Set<RegexOption>) {
    /** Creates a regular expression from the specified [pattern] string and the specified single [option]. */
    public actual constructor(pattern: String, option: RegexOptions) : this(pattern, setOf(option))
    /** Creates a regular expression from the specified [pattern] string and the default options. */
    public actual constructor(pattern: String) : this(pattern, emptySet())
    /** The pattern string of this regular expression. */
    public actual val pattern: String = pattern
    /** The set of options that were used to create this regular expression. */
    public actual val options: Set<RegexOption> = options.toSet()
    private val nativePattern: RegExp = RegExp(pattern, options.map { it.value }.joinToString(separator = "\\") + "g")
    /** Indicates whether the regular expression matches the entire [input]. */
    public actual infix fun matches(input: CharSequence): Boolean {
        nativePattern.reset()
    }
}

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    val match = nativePattern.exec(input.toString())\n    return match != null && match.index == 0 &&
nativePattern.lastIndex == input.length\n    }\n\n /** Indicates whether the regular expression can find at least one
match in the specified [input]. */\n    public actual fun containsMatchIn(input: CharSequence): Boolean {\n
nativePattern.reset()\n    return nativePattern.test(input.toString())\n    }\n\n /** Returns the first match of a
regular expression in the [input], beginning at the specified [startIndex].\n    *\n    * @param startIndex An index to
start search with, by default 0. Must be not less than zero and not greater than `input.length()`\n    * @return An
instance of [MatchResult] if match was found or `null` otherwise.\n    */\n
@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\n    public actual fun find(input:
CharSequence, startIndex: Int = 0): MatchResult? = nativePattern.findNext(input.toString(), startIndex)\n\n /***\n
* Returns a sequence of all occurrences of a regular expression within the [input] string, beginning at the specified
[startIndex].\n    *\n    * @sample samples.text.Regexps.findAll\n    */\n
@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\n    public actual fun findAll(input:
CharSequence, startIndex: Int = 0): Sequence<MatchResult> =\n        generateSequence({ find(input, startIndex) },
{ match -> match.next() })\n\n /***\n    * Attempts to match the entire [input] CharSequence against the pattern.\n
*\n    * @return An instance of [MatchResult] if the entire input matches or `null` otherwise.\n    */\n    public
actual fun matchEntire(input: CharSequence): MatchResult? {\n        if (pattern.startsWith('^') &&
pattern.endsWith('$'))\n            return find(input)\n        else\n            return
Regex('^${pattern.trimStart('^').trimEnd('$')}$', options).find(input)\n    }\n\n /***\n    * Replaces all
occurrences of this regular expression in the specified [input] string with specified [replacement] expression.\n    *\n
    * @param replacement A replacement expression that can include substitutions. See
[String.prototype.replace](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/String/replace) function docs for details.\n    */\n    public
actual fun replace(input: CharSequence, replacement: String): String = input.toString().nativeReplace(nativePattern,
replacement)\n\n /***\n    * Replaces all occurrences of this regular expression in the specified [input] string with
the result of\n    * the given function [transform] that takes [MatchResult] and returns a string to be used as a\n    *
replacement for that match.\n    */\n    public actual inline fun replace(input: CharSequence, transform:
(MatchResult) -> CharSequence): String {\n        var match = find(input)\n        if (match == null) return
input.toString()\n        var lastStart = 0\n        val length = input.length\n        val sb = StringBuilder(length)\n
do {\n            val foundMatch = match!!\n            sb.append(input, lastStart, foundMatch.range.start)\n
sb.append(transform(foundMatch))\n            lastStart = foundMatch.range.endInclusive + 1\n            match =
foundMatch.next()\n        } while (lastStart < length && match != null)\n        if (lastStart < length) {\n
sb.append(input, lastStart, length)\n        }\n        return sb.toString()\n    }\n\n /***\n    * Replaces the first
occurrence of this regular expression in the specified [input] string with specified [replacement] expression.\n    *\n
    * @param replacement A replacement expression that can include substitutions. See
[String.prototype.replace](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/String/replace) function docs for details.\n    */\n    public
actual fun replaceFirst(input: CharSequence, replacement: String): String {\n        val nonGlobalOptions =
options.map { it.value }.joinToString(separator = "\\")\n        return input.toString().nativeReplace(RegExp(pattern,
nonGlobalOptions), replacement)\n    }\n\n /***\n    * Splits the [input] CharSequence around matches of this
regular expression.\n    *\n    * @param limit Non-negative value specifying the maximum number of substrings
the string can be split to.\n    * Zero by default means no limit is set.\n    */\n
@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\n    public actual fun split(input:
CharSequence, limit: Int = 0): List<String> {\n        require(limit >= 0) { "Limit must be non-negative, but was
$limit" }\n        val matches = findAll(input).let { if (limit == 0) it else it.take(limit - 1) }\n        val result =
mutableListOf<String>()\n        var lastStart = 0\n        for (match in matches) {\n
result.add(input.subSequence(lastStart, match.range.start).toString())\n            lastStart = match.range.endInclusive +
1\n        }\n        result.add(input.subSequence(lastStart, input.length).toString())\n        return result\n    }\n\n /***\n
    * Returns the string representation of this regular expression, namely the [pattern] of this regular

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ignoreCase)\n}\n\npublic fun String.matches(regex: String): Boolean {\n    val result = this.match(regex)\n    return result != null && result.size != 0}\n\npublic actual fun CharSequence.isBlank(): Boolean = length == 0 || (if
(this is String) this else
this.toString()).matches("^[\\s\\xA0]+$")\n\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGU
MENTS")\n\npublic actual fun String?.equals(other: String?, ignoreCase: Boolean = false): Boolean =\n    if (this ==
null)\n        other == null\n    else if (!ignoreCase)\n        this == other\n    else\n        other != null &&
this.toLowerCase() ==
other.toLowerCase()\n\n\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\n\npublic
actual fun CharSequence.regionMatches(thisOffset: Int, other: CharSequence, otherOffset: Int, length: Int,
ignoreCase: Boolean = false): Boolean =\n    regionMatchesImpl(thisOffset, other, otherOffset, length,
ignoreCase)\n\n\n/**\n * Returns a copy of this string having its first letter uppercased, or the original string,\n * if
it's empty or already starts with an upper case letter.\n * @sample samples.text.Strings.capitalize\n */\n\npublic
actual fun String.capitalize(): String {\n    return if (isEmpty()) substring(0, 1).toUpperCase() + substring(1) else
this}\n\n\n/**\n * Returns a copy of this string having its first letter lowercased, or the original string,\n * if it's
empty or already starts with a lower case letter.\n * @sample samples.text.Strings.decapiatalize\n */\n\npublic
actual fun String.decapiatalize(): String {\n    return if (isEmpty()) substring(0, 1).toLowerCase() + substring(1)
else this}\n\n\n/**\n * Returns a string containing this char sequence repeated [n] times.\n * @throws
[IllegalArgumentException] when n < 0.\n */\n\npublic actual fun CharSequence.repeat(n: Int): String {\n    require(n
>= 0) {\n        "Count 'n' must be non-negative, but was $n." }\n    return when (n) {\n        0 -> ""\n        1 ->
this.toString()\n        else -> {\n            var result = ""\n            if (!isEmpty()) {\n                var s =
this.toString()\n                var count = n\n                while (true) {\n                    if ((count and 1) == 1) {\n
                        result += s\n                    }\n                    count = count ushr 1\n                    if
(count == 0) {\n                        break\n                    }\n                    s += s\n                }\n            }
\n            return result\n        }\n    }\n}\n\n\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\n\npublic actual fun
String.replace(oldValue: String, newValue: String, ignoreCase: Boolean = false): String =\n    nativeReplace(RegExp(Regex.escape(oldValue), if (ignoreCase) "gi" else "g"),
Regex.escapeReplacement(newValue))\n\n\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENT
S")\n\npublic actual fun String.replace(oldChar: Char, newChar: Char, ignoreCase: Boolean = false): String =\n    nativeReplace(RegExp(Regex.escape(oldChar.toString()), if (ignoreCase) "gi" else "g"),
newChar.toString())\n\n\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\n\npublic actual
fun String.replaceFirst(oldValue: String, newValue: String, ignoreCase: Boolean = false): String =\n    nativeReplace(RegExp(Regex.escape(oldValue), if (ignoreCase) "i" else ""),
Regex.escapeReplacement(newValue))\n\n\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENT
S")\n\npublic actual fun String.replaceFirst(oldChar: Char, newChar: Char, ignoreCase: Boolean = false): String =\n    nativeReplace(RegExp(Regex.escape(oldChar.toString()), if (ignoreCase) "i" else ""),
newChar.toString())\n\n\n"/*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\npackage kotlin.text\n\n/**\n * Returns the negative [size] if [throwOnMalformed] is
false, throws [CharacterCodingException] otherwise.\n */\n\n@UseExperimental(ExperimentalStdlibApi::class)\n\nprivate fun malformed(size: Int, index: Int,
throwOnMalformed: Boolean): Int {\n    if (throwOnMalformed) throw CharacterCodingException("Malformed
sequence starting at ${index - 1}")\n    return -size}\n\n\n/**\n * Returns code point corresponding to UTF-16
surrogate pair,\n * where the first of the pair is the [high] and the second is in the [string] at the [index].\n * Returns
zero if the pair is malformed and [throwOnMalformed] is false.\n * @throws CharacterCodingException if the
pair is malformed and [throwOnMalformed] is true.\n */\n\nprivate fun codePointFromSurrogate(string: String, high:
Int, index: Int, endIndex: Int, throwOnMalformed: Boolean): Int {\n    if (high !in 0xD800..0xDBFF || index >=
endIndex) {\n        return malformed(0, index, throwOnMalformed)\n    }\n    val low = string[index].toInt()\n    if
(low !in 0xDC00..0xDFFF) {\n        return malformed(0, index, throwOnMalformed)\n    }\n    return 0x10000 +

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((high and 0x3FF) shl 10) or (low and 0x3FF)\n\n\n**\n * Returns code point corresponding to UTF-8 sequence of
two bytes,\n * where the first byte of the sequence is the [byte1] and the second byte is in the [bytes] array at the
[index].\n * Returns zero if the sequence is malformed and [throwOnMalformed] is false.\n *\n * @throws
CharacterCodingException if the sequence of two bytes is malformed and [throwOnMalformed] is true.\n
*\nprivate fun codePointFrom2(bytes: ByteArray, byte1: Int, index: Int, endIndex: Int, throwOnMalformed:
Boolean): Int {\n if (byte1 and 0x1E == 0 || index >= endIndex) {\n return malformed(0, index,
throwOnMalformed)\n }\n val byte2 = bytes[index].toInt()\n if (byte2 and 0xC0 != 0x80) {\n return
malformed(0, index, throwOnMalformed)\n }\n return (byte1 shl 6) xor byte2 xor 0xF80\n}\n\n\n**\n * Returns
code point corresponding to UTF-8 sequence of three bytes,\n * where the first byte of the sequence is the [byte1]
and the others are in the [bytes] array starting from the [index].\n * Returns a non-positive value indicating number
of bytes from [bytes] included in malformed sequence\n * if the sequence is malformed and [throwOnMalformed] is
false.\n *\n * @throws CharacterCodingException if the sequence of three bytes is malformed and
[throwOnMalformed] is true.\n *\nprivate fun codePointFrom3(bytes: ByteArray, byte1: Int, index: Int, endIndex:
Int, throwOnMalformed: Boolean): Int {\n if (index >= endIndex) {\n return malformed(0, index,
throwOnMalformed)\n }\n\n val byte2 = bytes[index].toInt()\n if (byte1 and 0xF == 0) {\n if (byte2 and
0xE0 != 0xA0) {\n // Non-shortest form\n return malformed(0, index, throwOnMalformed)\n }\n }
else if (byte1 and 0xF == 0xD) {\n if (byte2 and 0xE0 != 0x80) {\n // Surrogate code point\n
return malformed(0, index, throwOnMalformed)\n }\n } else if (byte2 and 0xC0 != 0x80) {\n return
malformed(0, index, throwOnMalformed)\n }\n\n if (index + 1 == endIndex) {\n return malformed(1, index,
throwOnMalformed)\n }\n val byte3 = bytes[index + 1].toInt()\n if (byte3 and 0xC0 != 0x80) {\n return
malformed(1, index, throwOnMalformed)\n }\n\n return (byte1 shl 12) xor (byte2 shl 6) xor byte3 xor -
0x1E080\n}\n\n\n**\n * Returns code point corresponding to UTF-8 sequence of four bytes,\n * where the first byte
of the sequence is the [byte1] and the others are in the [bytes] array starting from the [index].\n * Returns a non-
positive value indicating number of bytes from [bytes] included in malformed sequence\n * if the sequence is
malformed and [throwOnMalformed] is false.\n *\n * @throws CharacterCodingException if the sequence of four
bytes is malformed and [throwOnMalformed] is true.\n *\nprivate fun codePointFrom4(bytes: ByteArray, byte1:
Int, index: Int, endIndex: Int, throwOnMalformed: Boolean): Int {\n if (index >= endIndex) {\n
malformed(0, index, throwOnMalformed)\n }\n\n val byte2 = bytes[index].toInt()\n if (byte1 and 0xF == 0x0) {\n if
(byte2 and 0xF0 <= 0x80) {\n // Non-shortest form\n return malformed(0, index,
throwOnMalformed)\n }\n } else if (byte1 and 0xF == 0x4) {\n if (byte2 and 0xF0 != 0x80) {\n //
Out of Unicode code points domain (larger than U+10FFFF)\n return malformed(0, index,
throwOnMalformed)\n }\n } else if (byte1 and 0xF > 0x4) {\n return malformed(0, index,
throwOnMalformed)\n } else if (byte2 and 0xC0 != 0x80) {\n return malformed(0, index,
throwOnMalformed)\n }\n\n if (index + 1 == endIndex) {\n return malformed(1, index,
throwOnMalformed)\n }\n val byte3 = bytes[index + 1].toInt()\n if (byte3 and 0xC0 != 0x80) {\n return
malformed(1, index, throwOnMalformed)\n }\n\n if (index + 2 == endIndex) {\n return malformed(2, index,
throwOnMalformed)\n }\n val byte4 = bytes[index + 2].toInt()\n if (byte4 and 0xC0 != 0x80) {\n return
malformed(2, index, throwOnMalformed)\n }\n return (byte1 shl 18) xor (byte2 shl 12) xor (byte3 shl 6) xor
byte4 xor 0x381F80\n}\n\n\n**\n * Maximum number of bytes needed to encode a single char.\n *\n * Code points in
`0..0x7F` are encoded in a single byte.\n * Code points in `0x80..0x7FF` are encoded in two bytes.\n * Code points
in `0x800..0xD7FF` or in `0xE000..0xFFFF` are encoded in three bytes.\n * Surrogate code points in
`0xD800..0xDFFF` are not Unicode scalar values, therefore aren't encoded.\n * Code points in
`0x10000..0x10FFFF` are represented by a pair of surrogate `Char`s and are encoded in four bytes.\n *\nprivate
const val MAX_BYTES_PER_CHAR = 3\n\n**\n * The byte sequence a malformed UTF-16 char sequence is
replaced by.\n *\nprivate val REPLACEMENT_BYTE_SEQUENCE: ByteArray = byteArrayOf(0xEF.toByte(),
0xBF.toByte(), 0xBD.toByte())\n\n**\n * Encodes the [string] using UTF-8 and returns the resulting [ByteArray].\n
*\n * @param string the string to encode.\n * @param startIndex the start offset (inclusive) of the substring to
encode.\n * @param endIndex the end offset (exclusive) of the substring to encode.\n * @param

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throwOnMalformed whether to throw on malformed char sequence or replace by the
[REPLACEMENT_BYTE_SEQUENCE].\n *\n * @throws CharacterCodingException if the char sequence is
malformed and [throwOnMalformed] is true.\n *\ninternal fun encodeUtf8(string: String, startIndex: Int, endIndex:
Int, throwOnMalformed: Boolean): ByteArray {\n    require(startIndex >= 0 && endIndex <= string.length &&
startIndex <= endIndex)\n    val bytes = ByteArray((endIndex - startIndex) * MAX_BYTES_PER_CHAR)\n    var
byteIndex = 0\n    var charIndex = startIndex\n    while (charIndex < endIndex) {\n        val code =
string[charIndex++].toInt()\n        when {\n            code < 0x80 ->\n                bytes[byteIndex++] = code.toByte()\n            code < 0x800 -> {\n                bytes[byteIndex++] = ((code shr 6) or 0xC0).toByte()\n                bytes[byteIndex++] = ((code and 0x3F) or 0x80).toByte()\n            }\n            code < 0xD800 || code >= 0xE000 ->
{\n                bytes[byteIndex++] = ((code shr 12) or 0xE0).toByte()\n                bytes[byteIndex++] = (((code shr 6)
and 0x3F) or 0x80).toByte()\n                bytes[byteIndex++] = ((code and 0x3F) or 0x80).toByte()\n            }\n            else -> { // Surrogate char value\n                val codePoint = codePointFromSurrogate(string, code, charIndex,
endIndex, throwOnMalformed)\n                if (codePoint <= 0) {\n                    bytes[byteIndex++] =
REPLACEMENT_BYTE_SEQUENCE[0]\n                    bytes[byteIndex++] =
REPLACEMENT_BYTE_SEQUENCE[1]\n                    bytes[byteIndex++] =
REPLACEMENT_BYTE_SEQUENCE[2]\n                } else {\n                    bytes[byteIndex++] = ((codePoint shr
18) or 0xF0).toByte()\n                    bytes[byteIndex++] = (((codePoint shr 12) and 0x3F) or 0x80).toByte()\n                    bytes[byteIndex++] = (((codePoint shr 6) and 0x3F) or 0x80).toByte()\n                    bytes[byteIndex++] =
(((codePoint and 0x3F) or 0x80).toByte()\n                    charIndex++\n                }\n            }\n        }\n    }\n    return if (bytes.size == byteIndex) bytes else bytes.copyOf(byteIndex)\n}\n\n/**\n * The character a malformed
UTF-8 byte sequence is replaced by.\n *\nprivate const val REPLACEMENT_CHAR = "\uFFFF"\n\n/**\n *
Decodes the UTF-8 [bytes] array and returns the resulting [String].\n *\n * @param bytes the byte array to decode.\n
* @param startIndex the start offset (inclusive) of the array to be decoded.\n * @param endIndex the end offset
(exclusive) of the array to be encoded.\n * @param throwOnMalformed whether to throw on malformed byte
sequence or replace by the [REPLACEMENT_CHAR].\n *\n * @throws CharacterCodingException if the array is
malformed UTF-8 byte sequence and [throwOnMalformed] is true.\n *\ninternal fun decodeUtf8(bytes: ByteArray,
startIndex: Int, endIndex: Int, throwOnMalformed: Boolean): String {\n    require(startIndex >= 0 && endIndex <=
bytes.size && startIndex <= endIndex)\n    var byteIndex = startIndex\n    val stringBuilder = StringBuilder()\n    while (byteIndex < endIndex) {\n        val byte = bytes[byteIndex++].toInt()\n        when {\n            byte >= 0 ->\n                stringBuilder.append(byte.toChar())\n            byte shr 5 == -2 -> {\n                val code =
codePointFrom2(bytes, byte, byteIndex, endIndex, throwOnMalformed)\n                if (code <= 0) {\n                    stringBuilder.append(REPLACEMENT_CHAR)\n                    byteIndex += -code\n                } else {\n                    stringBuilder.append(code.toChar())\n                    byteIndex += 1\n                }\n            }\n            byte shr 4 == -2 -
> {\n                val code = codePointFrom3(bytes, byte, byteIndex, endIndex, throwOnMalformed)\n                if
(code <= 0) {\n                    stringBuilder.append(REPLACEMENT_CHAR)\n                    byteIndex += -code\n                } else {\n                    stringBuilder.append(code.toChar())\n                    byteIndex += 2\n                }\n            }\n            byte shr 3 == -2 -> {\n                val code = codePointFrom4(bytes, byte, byteIndex, endIndex,
throwOnMalformed)\n                if (code <= 0) {\n                    stringBuilder.append(REPLACEMENT_CHAR)\n                    byteIndex += -code\n                } else {\n                    val high = (code - 0x10000) shr 10 or 0xD800\n                    val low = (code and 0x3FF) or 0xDC00\n                    stringBuilder.append(high.toChar())\n                    stringBuilder.append(low.toChar())\n                    byteIndex += 3\n                }\n            }\n            else -> {\n                malformed(0, byteIndex, throwOnMalformed)\n                stringBuilder.append(REPLACEMENT_CHAR)\n            }\n        }\n    }\n    return stringBuilder.toString()\n}\n\n"/**\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin
Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be
found in the license/LICENSE.txt file.\n *\npackage
kotlin.time\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic actual enum class DurationUnit(internal val
scale: Double) {\n    /**\n     * Time unit representing one nanosecond, which is 1/1000 of a microsecond.\n     *\n    NANOSECONDS(1e0),\n    /**\n     * Time unit representing one microsecond, which is 1/1000 of a millisecond.\n     *\n}

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*/\n  MICROSECONDS(1e3),\n  /**\n   * Time unit representing one millisecond, which is 1/1000 of a
second.\n  */\n  MILLISECONDS(1e6),\n  /**\n   * Time unit representing one second.\n  */\n  SECONDS(1e9),\n  /**\n   * Time unit representing one minute.\n  */\n  MINUTES(60e9),\n  /**\n   * Time
unit representing one hour.\n  */\n  HOURS(3600e9),\n  /**\n   * Time unit representing one day, which is
always equal to 24 hours.\n  */\n  DAYS(86400e9);\n}\n\n@SinceKotlin("1.3")\n@ExperimentalTime\ninternal
actual fun convertDurationUnit(value: Double, sourceUnit: DurationUnit, targetUnit: DurationUnit): Double {\n
val sourceCompareTarget = sourceUnit.scale.compareTo(targetUnit.scale)\n  return when {\n
sourceCompareTarget > 0 -> value * (sourceUnit.scale / targetUnit.scale)\n    sourceCompareTarget < 0 -> value /
(targetUnit.scale / sourceUnit.scale)\n    else -> value\n  }\n}\n\n"/*\n * Copyright 2010-2020 JetBrains s.r.o.
and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license
that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.time\n\nimport
org.w3c.performance.GlobalPerformance\n\nimport
org.w3c.performance.Performance\n\n@SinceKotlin("1.3")\n@ExperimentalTime\ninternal actual object
MonotonicTimeSource : TimeSource {\n  private val actualSource: TimeSource = run {\n    val isNode:
Boolean = js("typeof process !== 'undefined' && process.versions && !process.versions.node")\n    if
(isNode)\n      HrTimeSource(js("process").unsafeCast<Process>())\n    else\n
js("self").unsafeCast<GlobalPerformance?>()?.performance?.let(::PerformanceTimeSource)\n    ?:
DateNowTimeSource\n  }\n  override fun markNow(): TimeMark = actualSource.markNow()\n}\n\ninternal
external interface Process {\n  fun hrtime(time: Array<Double> = definedExternally):
Array<Double>\n}\n\n@SinceKotlin("1.3")\n@ExperimentalTime\ninternal class HrTimeSource(val process:
Process) : TimeSource {\n  override fun markNow(): TimeMark = object : TimeMark() {\n    val startedAt =
process.hrtime()\n    override fun elapsedNow(): Duration =\n      process.hrtime(startedAt).let { (seconds,
nanos) -> seconds.seconds + nanos.nanoseconds }\n  }\n  override fun toString(): String =
\n"TimeSource(process.hrtime())"\n}\n\n@SinceKotlin("1.3")\n@ExperimentalTime\ninternal class
PerformanceTimeSource(val performance: Performance) : AbstractDoubleTimeSource(unit =
DurationUnit.MILLISECONDS) {\n  override fun read(): Double = performance.now()\n  override fun toString():
String = \n"TimeSource(self.performance.now())"\n}\n\n@SinceKotlin("1.3")\n@ExperimentalTime\ninternal
object DateNowTimeSource : AbstractDoubleTimeSource(unit = DurationUnit.MILLISECONDS) {\n  override
fun read(): Double = kotlin.js.Date.now()\n  override fun toString(): String = \n"TimeSource(Date.now())"\n}"/*\n
* Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code
is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage
kotlin.time\n\nimport kotlin.js.json\nimport kotlin.math.*\n\ninternal actual fun formatToExactDecimals(value:
Double, decimals: Int): String {\n  val rounded = if (decimals == 0) {\n    value\n  } else {\n    val pow =
10.0.pow(decimals)\n    @Suppress("DEPRECATION", "DEPRECATION_ERROR")\n
kotlin.js.Math.round(abs(value) * pow) / pow * sign(value)\n  }\n  return
rounded.asDynamic().toFixed(decimals).unsafeCast<String>()\n}\n\ninternal actual fun
formatUpToDecimals(value: Double, decimals: Int): String {\n  return value.asDynamic().toLocaleString("en-us",
json("maximumFractionDigits" to decimals)).unsafeCast<String>()\n}\n\ninternal actual fun
formatScientific(value: Double): String {\n  return
value.asDynamic().toExponential(2).unsafeCast<String>()\n}"/*\n * Copyright 2010-2019 JetBrains s.r.o. and
Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that
can be found in the license/LICENSE.txt file.\n */\n\npackage org.w3c.dom\n\n@Deprecated("Use
UnionMessagePortOrWindowProxy instead.", ReplaceWith("UnionMessagePortOrWindowProxy"))\ntypealias
UnionMessagePortOrWindow = UnionMessagePortOrWindowProxy\n\n@Deprecated("Use `as` instead.",
ReplaceWith("`as`"))\nvar HTMLLinkElement.as_ get() = `as`\n set(value) {\n  `as` = value\n
}\n\n@Deprecated("Use `is` instead.", ReplaceWith("`is`"))\nvar ElementCreationOptions.is_ get() = `is`\n
set(value) {\n  `is` = value\n }"/*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming
Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the

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license/LICENSE.txt file.\n */\n\n// NOTE: THIS FILE IS AUTO-GENERATED, DO NOT EDIT!\n// See
github.com/kotlin/dukat for details\n\npackage org.khronos.webgl\n\nimport kotlin.js.*\nimport
org.w3c.css.masking.*\nimport org.w3c.dom.*\nimport org.w3c.dom.clipboard.*\nimport
org.w3c.dom.css.*\nimport org.w3c.dom.events.*\nimport org.w3c.dom.mediacapture.*\nimport
org.w3c.dom.parsing.*\nimport org.w3c.dom.pointerevents.*\nimport org.w3c.dom.svg.*\nimport
org.w3c.dom.url.*\nimport org.w3c.fetch.*\nimport org.w3c.files.*\nimport org.w3c.notifications.*\nimport
org.w3c.performance.*\nimport org.w3c.workers.*\nimport org.w3c.xhr.*\n\npublic external interface
WebGLContextAttributes {\n    var alpha: Boolean? /* = true */\n        get() = definedExternally\n        set(value) =
definedExternally\n    var depth: Boolean? /* = true */\n        get() = definedExternally\n        set(value) =
definedExternally\n    var stencil: Boolean? /* = false */\n        get() = definedExternally\n        set(value) =
definedExternally\n    var antialias: Boolean? /* = true */\n        get() = definedExternally\n        set(value) =
definedExternally\n    var premultipliedAlpha: Boolean? /* = true */\n        get() = definedExternally\n
set(value) = definedExternally\n    var preserveDrawingBuffer: Boolean? /* = false */\n        get() =
definedExternally\n        set(value) = definedExternally\n    var preferLowPowerToHighPerformance: Boolean? /* =
false */\n        get() = definedExternally\n        set(value) = definedExternally\n    var failIfMajorPerformanceCaveat:
Boolean? /* = false */\n        get() = definedExternally\n        set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun WebGLContextAttributes(alpha: Boolean? =
true, depth: Boolean? = true, stencil: Boolean? = false, antialias: Boolean? = true, premultipliedAlpha: Boolean? =
true, preserveDrawingBuffer: Boolean? = false, preferLowPowerToHighPerformance: Boolean? = false,
failIfMajorPerformanceCaveat: Boolean? = false): WebGLContextAttributes {\n    val o = js("{}")\n    o["alpha"] = alpha\n    o["depth"] = depth\n    o["stencil"] = stencil\n    o["antialias"] = antialias\n
o["premultipliedAlpha"] = premultipliedAlpha\n    o["preserveDrawingBuffer"] = preserveDrawingBuffer\n
o["preferLowPowerToHighPerformance"] = preferLowPowerToHighPerformance\n
o["failIfMajorPerformanceCaveat"] = failIfMajorPerformanceCaveat\n    return o\n}\n\npublic external abstract
class WebGLObject\n\n/**\n * Exposes the JavaScript
[WebGLBuffer](https://developer.mozilla.org/en/docs/Web/API/WebGLBuffer) to Kotlin\n */\npublic external
abstract class WebGLBuffer : WebGLObject\n\n/**\n * Exposes the JavaScript
[WebGLFramebuffer](https://developer.mozilla.org/en/docs/Web/API/WebGLFramebuffer) to Kotlin\n */\npublic
external abstract class WebGLFramebuffer : WebGLObject\n\n/**\n * Exposes the JavaScript
[WebGLProgram](https://developer.mozilla.org/en/docs/Web/API/WebGLProgram) to Kotlin\n */\npublic external
abstract class WebGLProgram : WebGLObject\n\n/**\n * Exposes the JavaScript
[WebGLRenderbuffer](https://developer.mozilla.org/en/docs/Web/API/WebGLRenderbuffer) to Kotlin\n */\npublic
external abstract class WebGLRenderbuffer : WebGLObject\n\n/**\n * Exposes the JavaScript
[WebGLShader](https://developer.mozilla.org/en/docs/Web/API/WebGLShader) to Kotlin\n */\npublic external
abstract class WebGLShader : WebGLObject\n\n/**\n * Exposes the JavaScript
[WebGLTexture](https://developer.mozilla.org/en/docs/Web/API/WebGLTexture) to Kotlin\n */\npublic external
abstract class WebGLTexture : WebGLObject\n\n/**\n * Exposes the JavaScript
[WebGLUniformLocation](https://developer.mozilla.org/en/docs/Web/API/WebGLUniformLocation) to Kotlin\n
*/\npublic external abstract class WebGLUniformLocation\n\n/**\n * Exposes the JavaScript
[WebGLActiveInfo](https://developer.mozilla.org/en/docs/Web/API/WebGLActiveInfo) to Kotlin\n */\npublic
external abstract class WebGLActiveInfo {\n    open val size: Int\n    open val type: Int\n    open val name:
String\n}\n\n/**\n * Exposes the JavaScript
[WebGLShaderPrecisionFormat](https://developer.mozilla.org/en/docs/Web/API/WebGLShaderPrecisionFormat) to
Kotlin\n */\npublic external abstract class WebGLShaderPrecisionFormat {\n    open val rangeMin: Int\n    open val
rangeMax: Int\n    open val precision:
Int\n}\n\n}\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\npublic external interface
WebGLRenderingContextBase {\n    val canvas: HTMLCanvasElement\n    val drawingBufferWidth: Int\n    val
drawingBufferHeight: Int\n    fun getContextAttributes(): WebGLContextAttributes?\n    fun isContextLost():

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Boolean\n fun getSupportedExtensions(): Array<String>?\n fun getExtension(name: String): dynamic\n fun
activeTexture(texture: Int)\n fun attachShader(program: WebGLProgram?, shader: WebGLShader?)\n fun
bindAttribLocation(program: WebGLProgram?, index: Int, name: String)\n fun glBindBuffer(target: Int, buffer:
WebGLBuffer?)\n fun glBindFramebuffer(target: Int, framebuffer: WebGLFramebuffer?)\n fun
bindRenderbuffer(target: Int, renderbuffer: WebGLRenderbuffer?)\n fun bindTexture(target: Int, texture:
WebGLTexture?)\n fun blendColor(red: Float, green: Float, blue: Float, alpha: Float)\n fun
blendEquation(mode: Int)\n fun blendEquationSeparate(modeRGB: Int, modeAlpha: Int)\n fun
blendFunc(sfactor: Int, dfactor: Int)\n fun blendFuncSeparate(srcRGB: Int, dstRGB: Int, srcAlpha: Int, dstAlpha:
Int)\n fun bufferData(target: Int, size: Int, usage: Int)\n fun bufferData(target: Int, data: BufferDataSource?,
usage: Int)\n fun bufferSubData(target: Int, offset: Int, data: BufferDataSource?)\n fun
checkFramebufferStatus(target: Int): Int\n fun clear(mask: Int)\n fun clearColor(red: Float, green: Float, blue:
Float, alpha: Float)\n fun clearDepth(depth: Float)\n fun clearStencil(s: Int)\n fun colorMask(red: Boolean,
green: Boolean, blue: Boolean, alpha: Boolean)\n fun compileShader(shader: WebGLShader?)\n fun
compressedTexImage2D(target: Int, level: Int, internalformat: Int, width: Int, height: Int, border: Int, data:
ArrayBufferView)\n fun compressedTexSubImage2D(target: Int, level: Int, xoffset: Int, yoffset: Int, width: Int,
height: Int, format: Int, data: ArrayBufferView)\n fun copyTexImage2D(target: Int, level: Int, internalformat: Int,
x: Int, y: Int, width: Int, height: Int, border: Int)\n fun copyTexSubImage2D(target: Int, level: Int, xoffset: Int,
yoffset: Int, x: Int, y: Int, width: Int, height: Int)\n fun createBuffer(): WebGLBuffer?\n fun createFramebuffer():
WebGLFramebuffer?\n fun createProgram(): WebGLProgram?\n fun createRenderbuffer():
WebGLRenderbuffer?\n fun createShader(type: Int): WebGLShader?\n fun createTexture(): WebGLTexture?\n
fun cullFace(mode: Int)\n fun deleteBuffer(buffer: WebGLBuffer?)\n fun deleteFramebuffer(framebuffer:
WebGLFramebuffer?)\n fun deleteProgram(program: WebGLProgram?)\n fun deleteRenderbuffer(renderbuffer:
WebGLRenderbuffer?)\n fun deleteShader(shader: WebGLShader?)\n fun deleteTexture(texture:
WebGLTexture?)\n fun depthFunc(func: Int)\n fun depthMask(flag: Boolean)\n fun depthRange(zNear: Float,
zFar: Float)\n fun detachShader(program: WebGLProgram?, shader: WebGLShader?)\n fun disable(cap: Int)\n
fun disableVertexArray(index: Int)\n fun drawArrays(mode: Int, first: Int, count: Int)\n fun
drawElements(mode: Int, count: Int, type: Int, offset: Int)\n fun enable(cap: Int)\n fun
enableVertexArray(index: Int)\n fun finish()\n fun flush()\n fun framebufferRenderbuffer(target: Int,
attachment: Int, renderbuffertarget: Int, renderbuffer: WebGLRenderbuffer?)\n fun framebufferTexture2D(target:
Int, attachment: Int, textarget: Int, texture: WebGLTexture?, level: Int)\n fun frontFace(mode: Int)\n fun
generateMipmap(target: Int)\n fun getActiveAttrib(program: WebGLProgram?, index: Int): WebGLActiveInfo?\n
fun getActiveUniform(program: WebGLProgram?, index: Int): WebGLActiveInfo?\n fun
getAttachedShaders(program: WebGLProgram?): Array<WebGLShader>?\n fun getAttribLocation(program:
WebGLProgram?, name: String): Int\n fun getBufferParameter(target: Int, pname: Int): Any?\n fun
getParameter(pname: Int): Any?\n fun getError(): Int\n fun getFramebufferAttachmentParameter(target: Int,
attachment: Int, pname: Int): Any?\n fun getProgramParameter(program: WebGLProgram?, pname: Int): Any?\n
fun getProgramInfoLog(program: WebGLProgram?): String?\n fun getRenderbufferParameter(target: Int, pname:
Int): Any?\n fun getShaderParameter(shader: WebGLShader?, pname: Int): Any?\n fun
getShaderPrecisionFormat(shadertype: Int, precisiontype: Int): WebGLShaderPrecisionFormat?\n fun
getShaderInfoLog(shader: WebGLShader?): String?\n fun getShaderSource(shader: WebGLShader?): String?\n
fun getTexParameter(target: Int, pname: Int): Any?\n fun getUniform(program: WebGLProgram?, location:
WebGLUniformLocation?): Any?\n fun getUniformLocation(program: WebGLProgram?, name: String):
WebGLUniformLocation?\n fun getVertexAttrib(index: Int, pname: Int): Any?\n fun
getVertexAttribOffset(index: Int, pname: Int): Int\n fun hint(target: Int, mode: Int)\n fun isBuffer(buffer:
WebGLBuffer?): Boolean\n fun isEnabled(cap: Int): Boolean\n fun isFramebuffer(framebuffer:
WebGLFramebuffer?): Boolean\n fun isProgram(program: WebGLProgram?): Boolean\n fun
isRenderbuffer(renderbuffer: WebGLRenderbuffer?): Boolean\n fun isShader(shader: WebGLShader?): Boolean\n
fun isTexture(texture: WebGLTexture?): Boolean\n fun lineWidth(width: Float)\n fun linkProgram(program:

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OpenGLProgram?)\n fun pixelStorei(pname: Int, param: Int)\n fun polygonOffset(factor: Float, units: Float)\n
fun readPixels(x: Int, y: Int, width: Int, height: Int, format: Int, type: Int, pixels: ArrayBufferView?)\n fun
renderbufferStorage(target: Int, internalformat: Int, width: Int, height: Int)\n fun sampleCoverage(value: Float,
invert: Boolean)\n fun scissor(x: Int, y: Int, width: Int, height: Int)\n fun shaderSource(shader: WebGLShader?,
source: String)\n fun stencilFunc(func: Int, ref: Int, mask: Int)\n fun stencilFuncSeparate(face: Int, func: Int, ref:
Int, mask: Int)\n fun stencilMask(mask: Int)\n fun stencilMaskSeparate(face: Int, mask: Int)\n fun
stencilOp(fail: Int, zfail: Int, zpass: Int)\n fun stencilOpSeparate(face: Int, fail: Int, zfail: Int, zpass: Int)\n fun
texImage2D(target: Int, level: Int, internalformat: Int, width: Int, height: Int, border: Int, format: Int, type: Int, pixels:
ArrayBufferView?)\n fun texImage2D(target: Int, level: Int, internalformat: Int, format: Int, type: Int, source:
TexImageSource?)\n fun texParameterf(target: Int, pname: Int, param: Float)\n fun texParameteri(target: Int,
pname: Int, param: Int)\n fun texSubImage2D(target: Int, level: Int, xoffset: Int, yoffset: Int, width: Int, height: Int,
format: Int, type: Int, pixels: ArrayBufferView?)\n fun texSubImage2D(target: Int, level: Int, xoffset: Int, yoffset:
Int, format: Int, type: Int, source: TexImageSource?)\n fun uniform1f(location: WebGLUniformLocation?, x:
Float)\n fun uniform1fv(location: WebGLUniformLocation?, v: Float32Array)\n fun uniform1fv(location:
WebGLUniformLocation?, v: Array<Float>)\n fun uniform1i(location: WebGLUniformLocation?, x: Int)\n fun
uniform1iv(location: WebGLUniformLocation?, v: Int32Array)\n fun uniform1iv(location:
WebGLUniformLocation?, v: Array<Int>)\n fun uniform2f(location: WebGLUniformLocation?, x: Float, y:
Float)\n fun uniform2fv(location: WebGLUniformLocation?, v: Float32Array)\n fun uniform2fv(location:
WebGLUniformLocation?, v: Array<Float>)\n fun uniform2i(location: WebGLUniformLocation?, x: Int, y: Int)\n
fun uniform2iv(location: WebGLUniformLocation?, v: Int32Array)\n fun uniform2iv(location:
WebGLUniformLocation?, v: Array<Int>)\n fun uniform3f(location: WebGLUniformLocation?, x: Float, y: Float,
z: Float)\n fun uniform3fv(location: WebGLUniformLocation?, v: Float32Array)\n fun uniform3fv(location:
WebGLUniformLocation?, v: Array<Float>)\n fun uniform3i(location: WebGLUniformLocation?, x: Int, y: Int, z:
Int)\n fun uniform3iv(location: WebGLUniformLocation?, v: Int32Array)\n fun uniform3iv(location:
WebGLUniformLocation?, v: Array<Int>)\n fun uniform4f(location: WebGLUniformLocation?, x: Float, y: Float,
z: Float, w: Float)\n fun uniform4fv(location: WebGLUniformLocation?, v: Float32Array)\n fun
uniform4fv(location: WebGLUniformLocation?, v: Array<Float>)\n fun uniform4i(location:
WebGLUniformLocation?, x: Int, y: Int, z: Int, w: Int)\n fun uniform4iv(location: WebGLUniformLocation?, v:
Int32Array)\n fun uniform4iv(location: WebGLUniformLocation?, v: Array<Int>)\n fun
uniformMatrix2fv(location: WebGLUniformLocation?, transpose: Boolean, value: Float32Array)\n fun
uniformMatrix2fv(location: WebGLUniformLocation?, transpose: Boolean, value: Array<Float>)\n fun
uniformMatrix3fv(location: WebGLUniformLocation?, transpose: Boolean, value: Float32Array)\n fun
uniformMatrix3fv(location: WebGLUniformLocation?, transpose: Boolean, value: Array<Float>)\n fun
uniformMatrix4fv(location: WebGLUniformLocation?, transpose: Boolean, value: Float32Array)\n fun
uniformMatrix4fv(location: WebGLUniformLocation?, transpose: Boolean, value: Array<Float>)\n fun
useProgram(program: WebGLProgram?)\n fun validateProgram(program: WebGLProgram?)\n fun
vertexAttrib1f(index: Int, x: Float)\n fun vertexAttrib1fv(index: Int, values: dynamic)\n fun
vertexAttrib2f(index: Int, x: Float, y: Float)\n fun vertexAttrib2fv(index: Int, values: dynamic)\n fun
vertexAttrib3f(index: Int, x: Float, y: Float, z: Float)\n fun vertexAttrib3fv(index: Int, values: dynamic)\n fun
vertexAttrib4f(index: Int, x: Float, y: Float, z: Float, w: Float)\n fun vertexAttrib4fv(index: Int, values: dynamic)\n
fun vertexAttribPointer(index: Int, size: Int, type: Int, normalized: Boolean, stride: Int, offset: Int)\n fun
viewport(x: Int, y: Int, width: Int, height: Int)\n\n companion object {\n val DEPTH_BUFFER_BIT: Int\n
val STENCIL_BUFFER_BIT: Int\n val COLOR_BUFFER_BIT: Int\n val POINTS: Int\n val LINES:
Int\n val LINE_LOOP: Int\n val LINE_STRIP: Int\n val TRIANGLES: Int\n val
TRIANGLE_STRIP: Int\n val TRIANGLE_FAN: Int\n val ZERO: Int\n val ONE: Int\n val
SRC_COLOR: Int\n val ONE_MINUS_SRC_COLOR: Int\n val SRC_ALPHA: Int\n val
ONE_MINUS_SRC_ALPHA: Int\n val DST_ALPHA: Int\n val ONE_MINUS_DST_ALPHA: Int\n
val DST_COLOR: Int\n val ONE_MINUS_DST_COLOR: Int\n val SRC_ALPHA_SATURATE: Int\n

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val FUNC\_ADD: Int\n
 val BLEND\_EQUATION: Int\n
 val BLEND\_EQUATION\_RGB: Int\n
 val BLEND\_EQUATION\_ALPHA: Int\n
 val FUNC\_SUBTRACT: Int\n
 val FUNC\_REVERSE\_SUBTRACT: Int\n
 val BLEND\_DST\_RGB: Int\n
 val BLEND\_SRC\_RGB: Int\n
 val BLEND\_DST\_ALPHA: Int\n
 val BLEND\_SRC\_ALPHA: Int\n
 val CONSTANT\_COLOR: Int\n
 val ONE\_MINUS\_CONSTANT\_COLOR: Int\n
 val CONSTANT\_ALPHA: Int\n
 val ONE\_MINUS\_CONSTANT\_ALPHA: Int\n
 val BLEND\_COLOR: Int\n
 val ARRAY\_BUFFER: Int\n
 val ELEMENT\_ARRAY\_BUFFER: Int\n
 val ARRAY\_BUFFER\_BINDING: Int\n
 val ELEMENT\_ARRAY\_BUFFER\_BINDING: Int\n
 val STREAM\_DRAW: Int\n
 val STATIC\_DRAW: Int\n
 val DYNAMIC\_DRAW: Int\n
 val BUFFER\_SIZE: Int\n
 val BUFFER\_USAGE: Int\n
 val CURRENT\_VERTEX\_ATTRIB: Int\n
 val FRONT: Int\n
 val BACK: Int\n
 val FRONT\_AND\_BACK: Int\n
 val CULL\_FACE: Int\n
 val BLEND: Int\n
 val DITHER: Int\n
 val STENCIL\_TEST: Int\n
 val DEPTH\_TEST: Int\n
 val SCISSOR\_TEST: Int\n
 val POLYGON\_OFFSET\_FILL: Int\n
 val SAMPLE\_ALPHA\_TO\_COVERAGE: Int\n
 val SAMPLE\_COVERAGE: Int\n
 val NO\_ERROR: Int\n
 val INVALID\_ENUM: Int\n
 val INVALID\_VALUE: Int\n
 val INVALID\_OPERATION: Int\n
 val OUT\_OF\_MEMORY: Int\n
 val CW: Int\n
 val CCW: Int\n
 val LINE\_WIDTH: Int\n
 val ALIASED\_POINT\_SIZE\_RANGE: Int\n
 val ALIASED\_LINE\_WIDTH\_RANGE: Int\n
 val CULL\_FACE\_MODE: Int\n
 val FRONT\_FACE: Int\n
 val DEPTH\_RANGE: Int\n
 val DEPTH\_WRITEMASK: Int\n
 val DEPTH\_CLEAR\_VALUE: Int\n
 val DEPTH\_FUNC: Int\n
 val STENCIL\_CLEAR\_VALUE: Int\n
 val STENCIL\_FUNC: Int\n
 val STENCIL\_FAIL: Int\n
 val STENCIL\_PASS\_DEPTH\_FAIL: Int\n
 val STENCIL\_PASS\_DEPTH\_PASS: Int\n
 val STENCIL\_REF: Int\n
 val STENCIL\_VALUE\_MASK: Int\n
 val STENCIL\_WRITEMASK: Int\n
 val STENCIL\_BACK\_FUNC: Int\n
 val STENCIL\_BACK\_FAIL: Int\n
 val STENCIL\_BACK\_PASS\_DEPTH\_FAIL: Int\n
 val STENCIL\_BACK\_PASS\_DEPTH\_PASS: Int\n
 val STENCIL\_BACK\_REF: Int\n
 val STENCIL\_BACK\_VALUE\_MASK: Int\n
 val STENCIL\_BACK\_WRITEMASK: Int\n
 val VIEWPORT: Int\n
 val SCISSOR\_BOX: Int\n
 val COLOR\_CLEAR\_VALUE: Int\n
 val COLOR\_WRITEMASK: Int\n
 val UNPACK\_ALIGNMENT: Int\n
 val PACK\_ALIGNMENT: Int\n
 val MAX\_TEXTURE\_SIZE: Int\n
 val MAX\_VIEWPORT\_DIMS: Int\n
 val SUBPIXEL\_BITS: Int\n
 val RED\_BITS: Int\n
 val GREEN\_BITS: Int\n
 val BLUE\_BITS: Int\n
 val ALPHA\_BITS: Int\n
 val DEPTH\_BITS: Int\n
 val STENCIL\_BITS: Int\n
 val POLYGON\_OFFSET\_UNITS: Int\n
 val POLYGON\_OFFSET\_FACTOR: Int\n
 val TEXTURE\_BINDING\_2D: Int\n
 val SAMPLE\_BUFFERS: Int\n
 val SAMPLES: Int\n
 val SAMPLE\_COVERAGE\_VALUE: Int\n
 val SAMPLE\_COVERAGE\_INVERT: Int\n
 val COMPRESSED\_TEXTURE\_FORMATS: Int\n
 val DONT\_CARE: Int\n
 val FASTEST: Int\n
 val NICEST: Int\n
 val GENERATE\_MIPMAP\_HINT: Int\n
 val BYTE: Int\n
 val UNSIGNED\_BYTE: Int\n
 val SHORT: Int\n
 val UNSIGNED\_SHORT: Int\n
 val INT: Int\n
 val UNSIGNED\_INT: Int\n
 val FLOAT: Int\n
 val DEPTH\_COMPONENT: Int\n
 val ALPHA: Int\n
 val RGB: Int\n
 val RGBA: Int\n
 val LUMINANCE: Int\n
 val LUMINANCE\_ALPHA: Int\n
 val UNSIGNED\_SHORT\_4\_4\_4\_4: Int\n
 val UNSIGNED\_SHORT\_5\_5\_5\_1: Int\n
 val UNSIGNED\_SHORT\_5\_6\_5: Int\n
 val FRAGMENT\_SHADER: Int\n
 val VERTEX\_SHADER: Int\n
 val MAX\_VERTEX\_ATTRIBS: Int\n
 val MAX\_VERTEX\_UNIFORM\_VECTORS: Int\n
 val MAX\_VARYING\_VECTORS: Int\n
 val MAX\_COMBINED\_TEXTURE\_IMAGE\_UNITS: Int\n
 val MAX\_VERTEX\_TEXTURE\_IMAGE\_UNITS: Int\n
 val MAX\_TEXTURE\_IMAGE\_UNITS: Int\n
 val MAX\_FRAGMENT\_UNIFORM\_VECTORS: Int\n
 val SHADER\_TYPE: Int\n
 val DELETE\_STATUS: Int\n
 val LINK\_STATUS: Int\n
 val VALIDATE\_STATUS: Int\n
 val ATTACHED\_SHADERS: Int\n
 val ACTIVE\_UNIFORMS: Int\n
 val ACTIVE\_ATTRIBUTES: Int\n
 val SHADING\_LANGUAGE\_VERSION: Int\n
 val CURRENT\_PROGRAM: Int\n
 val NEVER: Int\n
 val LESS: Int\n
 val EQUAL: Int\n
 val LEQUAL: Int\n
 val GREATER: Int\n
 val NOTEQUAL: Int\n
 val GEQUAL: Int\n
 val ALWAYS: Int\n
 val KEEP: Int\n
 val REPLACE: Int\n
 val INCR: Int



val DECR: Int\n     val INVERT: Int\n     val INCR\_WRAP: Int\n     val DECR\_WRAP: Int\n     val  
 VENDOR: Int\n     val RENDERER: Int\n     val VERSION: Int\n     val NEAREST: Int\n     val LINEAR:  
 Int\n     val NEAREST\_MIPMAP\_NEAREST: Int\n     val LINEAR\_MIPMAP\_NEAREST: Int\n     val  
 NEAREST\_MIPMAP\_LINEAR: Int\n     val LINEAR\_MIPMAP\_LINEAR: Int\n     val  
 TEXTURE\_MAG\_FILTER: Int\n     val TEXTURE\_MIN\_FILTER: Int\n     val TEXTURE\_WRAP\_S: Int\n  
 val TEXTURE\_WRAP\_T: Int\n     val TEXTURE\_2D: Int\n     val TEXTURE: Int\n     val  
 TEXTURE\_CUBE\_MAP: Int\n     val TEXTURE\_BINDING\_CUBE\_MAP: Int\n     val  
 TEXTURE\_CUBE\_MAP\_POSITIVE\_X: Int\n     val TEXTURE\_CUBE\_MAP\_NEGATIVE\_X: Int\n     val  
 TEXTURE\_CUBE\_MAP\_POSITIVE\_Y: Int\n     val TEXTURE\_CUBE\_MAP\_NEGATIVE\_Y: Int\n     val  
 TEXTURE\_CUBE\_MAP\_POSITIVE\_Z: Int\n     val TEXTURE\_CUBE\_MAP\_NEGATIVE\_Z: Int\n     val  
 MAX\_CUBE\_MAP\_TEXTURE\_SIZE: Int\n     val TEXTURE0: Int\n     val TEXTURE1: Int\n     val  
 TEXTURE2: Int\n     val TEXTURE3: Int\n     val TEXTURE4: Int\n     val TEXTURE5: Int\n     val  
 TEXTURE6: Int\n     val TEXTURE7: Int\n     val TEXTURE8: Int\n     val TEXTURE9: Int\n     val  
 TEXTURE10: Int\n     val TEXTURE11: Int\n     val TEXTURE12: Int\n     val TEXTURE13: Int\n     val  
 TEXTURE14: Int\n     val TEXTURE15: Int\n     val TEXTURE16: Int\n     val TEXTURE17: Int\n     val  
 TEXTURE18: Int\n     val TEXTURE19: Int\n     val TEXTURE20: Int\n     val TEXTURE21: Int\n     val  
 TEXTURE22: Int\n     val TEXTURE23: Int\n     val TEXTURE24: Int\n     val TEXTURE25: Int\n     val  
 TEXTURE26: Int\n     val TEXTURE27: Int\n     val TEXTURE28: Int\n     val TEXTURE29: Int\n     val  
 TEXTURE30: Int\n     val TEXTURE31: Int\n     val ACTIVE\_TEXTURE: Int\n     val REPEAT: Int\n  
 val CLAMP\_TO\_EDGE: Int\n     val MIRRORED\_REPEAT: Int\n     val FLOAT\_VEC2: Int\n     val  
 FLOAT\_VEC3: Int\n     val FLOAT\_VEC4: Int\n     val INT\_VEC2: Int\n     val INT\_VEC3: Int\n     val  
 INT\_VEC4: Int\n     val BOOL: Int\n     val BOOL\_VEC2: Int\n     val BOOL\_VEC3: Int\n     val  
 BOOL\_VEC4: Int\n     val FLOAT\_MAT2: Int\n     val FLOAT\_MAT3: Int\n     val FLOAT\_MAT4: Int\n  
 val SAMPLER\_2D: Int\n     val SAMPLER\_CUBE: Int\n     val VERTEX\_ATTRIB\_ARRAY\_ENABLED:  
 Int\n     val VERTEX\_ATTRIB\_ARRAY\_SIZE: Int\n     val VERTEX\_ATTRIB\_ARRAY\_STRIDE: Int\n  
 val VERTEX\_ATTRIB\_ARRAY\_TYPE: Int\n     val VERTEX\_ATTRIB\_ARRAY\_NORMALIZED: Int\n  
 val VERTEX\_ATTRIB\_ARRAY\_POINTER: Int\n     val VERTEX\_ATTRIB\_ARRAY\_BUFFER\_BINDING:  
 Int\n     val IMPLEMENTATION\_COLOR\_READ\_TYPE: Int\n     val  
 IMPLEMENTATION\_COLOR\_READ\_FORMAT: Int\n     val COMPILE\_STATUS: Int\n     val  
 LOW\_FLOAT: Int\n     val MEDIUM\_FLOAT: Int\n     val HIGH\_FLOAT: Int\n     val LOW\_INT: Int\n  
 val MEDIUM\_INT: Int\n     val HIGH\_INT: Int\n     val FRAMEBUFFER: Int\n     val RENDERBUFFER:  
 Int\n     val RGBA4: Int\n     val RGB5\_A1: Int\n     val RGB565: Int\n     val DEPTH\_COMPONENT16:  
 Int\n     val STENCIL\_INDEX: Int\n     val STENCIL\_INDEX8: Int\n     val DEPTH\_STENCIL: Int\n     val  
 RENDERBUFFER\_WIDTH: Int\n     val RENDERBUFFER\_HEIGHT: Int\n     val  
 RENDERBUFFER\_INTERNAL\_FORMAT: Int\n     val RENDERBUFFER\_RED\_SIZE: Int\n     val  
 RENDERBUFFER\_GREEN\_SIZE: Int\n     val RENDERBUFFER\_BLUE\_SIZE: Int\n     val  
 RENDERBUFFER\_ALPHA\_SIZE: Int\n     val RENDERBUFFER\_DEPTH\_SIZE: Int\n     val  
 RENDERBUFFER\_STENCIL\_SIZE: Int\n     val FRAMEBUFFER\_ATTACHMENT\_OBJECT\_TYPE: Int\n  
 val FRAMEBUFFER\_ATTACHMENT\_OBJECT\_NAME: Int\n     val  
 FRAMEBUFFER\_ATTACHMENT\_TEXTURE\_LEVEL: Int\n     val  
 FRAMEBUFFER\_ATTACHMENT\_TEXTURE\_CUBE\_MAP\_FACE: Int\n     val COLOR\_ATTACHMENT0:  
 Int\n     val DEPTH\_ATTACHMENT: Int\n     val STENCIL\_ATTACHMENT: Int\n     val  
 DEPTH\_STENCIL\_ATTACHMENT: Int\n     val NONE: Int\n     val FRAMEBUFFER\_COMPLETE: Int\n  
 val FRAMEBUFFER\_INCOMPLETE\_ATTACHMENT: Int\n     val  
 FRAMEBUFFER\_INCOMPLETE\_MISSING\_ATTACHMENT: Int\n     val  
 FRAMEBUFFER\_INCOMPLETE\_DIMENSIONS: Int\n     val FRAMEBUFFER\_UNSUPPORTED: Int\n  
 val FRAMEBUFFER\_BINDING: Int\n     val RENDERBUFFER\_BINDING: Int\n     val  
 MAX\_RENDERBUFFER\_SIZE: Int\n     val INVALID\_FRAMEBUFFER\_OPERATION: Int\n     val

```

UNPACK_FLIP_Y_WEBGL: Int\n    val UNPACK_PREMULTIPLY_ALPHA_WEBGL: Int\n    val
CONTEXT_LOST_WEBGL: Int\n    val UNPACK_COLORSPACE_CONVERSION_WEBGL: Int\n    val
BROWSER_DEFAULT_WEBGL: Int\n    }\n}\n\n/**\n * Exposes the JavaScript
[WebGLRenderingContext](https://developer.mozilla.org/en/docs/Web/API/WebGLRenderingContext) to Kotlin\n
*\npublic external abstract class WebGLRenderingContext : WebGLRenderingContextBase, RenderingContext {\n
companion object {\n    val DEPTH_BUFFER_BIT: Int\n    val STENCIL_BUFFER_BIT: Int\n    val
COLOR_BUFFER_BIT: Int\n    val POINTS: Int\n    val LINES: Int\n    val LINE_LOOP: Int\n    val
LINE_STRIP: Int\n    val TRIANGLES: Int\n    val TRIANGLE_STRIP: Int\n    val TRIANGLE_FAN:
Int\n    val ZERO: Int\n    val ONE: Int\n    val SRC_COLOR: Int\n    val ONE_MINUS_SRC_COLOR:
Int\n    val SRC_ALPHA: Int\n    val ONE_MINUS_SRC_ALPHA: Int\n    val DST_ALPHA: Int\n    val
ONE_MINUS_DST_ALPHA: Int\n    val DST_COLOR: Int\n    val ONE_MINUS_DST_COLOR: Int\n
val SRC_ALPHA_SATURATE: Int\n    val FUNC_ADD: Int\n    val BLEND_EQUATION: Int\n    val
BLEND_EQUATION_RGB: Int\n    val BLEND_EQUATION_ALPHA: Int\n    val FUNC_SUBTRACT:
Int\n    val FUNC_REVERSE_SUBTRACT: Int\n    val BLEND_DST_RGB: Int\n    val
BLEND_SRC_RGB: Int\n    val BLEND_DST_ALPHA: Int\n    val BLEND_SRC_ALPHA: Int\n    val
CONSTANT_COLOR: Int\n    val ONE_MINUS_CONSTANT_COLOR: Int\n    val CONSTANT_ALPHA:
Int\n    val ONE_MINUS_CONSTANT_ALPHA: Int\n    val BLEND_COLOR: Int\n    val
ARRAY_BUFFER: Int\n    val ELEMENT_ARRAY_BUFFER: Int\n    val ARRAY_BUFFER_BINDING:
Int\n    val ELEMENT_ARRAY_BUFFER_BINDING: Int\n    val STREAM_DRAW: Int\n    val
STATIC_DRAW: Int\n    val DYNAMIC_DRAW: Int\n    val BUFFER_SIZE: Int\n    val
BUFFER_USAGE: Int\n    val CURRENT_VERTEX_ATTRIB: Int\n    val FRONT: Int\n    val BACK:
Int\n    val FRONT_AND_BACK: Int\n    val CULL_FACE: Int\n    val BLEND: Int\n    val DITHER:
Int\n    val STENCIL_TEST: Int\n    val DEPTH_TEST: Int\n    val SCISSOR_TEST: Int\n    val
POLYGON_OFFSET_FILL: Int\n    val SAMPLE_ALPHA_TO_COVERAGE: Int\n    val
SAMPLE_COVERAGE: Int\n    val NO_ERROR: Int\n    val INVALID_ENUM: Int\n    val
INVALID_VALUE: Int\n    val INVALID_OPERATION: Int\n    val OUT_OF_MEMORY: Int\n    val CW:
Int\n    val CCW: Int\n    val LINE_WIDTH: Int\n    val ALIASED_POINT_SIZE_RANGE: Int\n    val
ALIASED_LINE_WIDTH_RANGE: Int\n    val CULL_FACE_MODE: Int\n    val FRONT_FACE: Int\n
val DEPTH_RANGE: Int\n    val DEPTH_WRITEMASK: Int\n    val DEPTH_CLEAR_VALUE: Int\n    val
DEPTH_FUNC: Int\n    val STENCIL_CLEAR_VALUE: Int\n    val STENCIL_FUNC: Int\n    val
STENCIL_FAIL: Int\n    val STENCIL_PASS_DEPTH_FAIL: Int\n    val STENCIL_PASS_DEPTH_PASS:
Int\n    val STENCIL_REF: Int\n    val STENCIL_VALUE_MASK: Int\n    val STENCIL_WRITEMASK:
Int\n    val STENCIL_BACK_FUNC: Int\n    val STENCIL_BACK_FAIL: Int\n    val
STENCIL_BACK_PASS_DEPTH_FAIL: Int\n    val STENCIL_BACK_PASS_DEPTH_PASS: Int\n    val
STENCIL_BACK_REF: Int\n    val STENCIL_BACK_VALUE_MASK: Int\n    val
STENCIL_BACK_WRITEMASK: Int\n    val VIEWPORT: Int\n    val SCISSOR_BOX: Int\n    val
COLOR_CLEAR_VALUE: Int\n    val COLOR_WRITEMASK: Int\n    val UNPACK_ALIGNMENT: Int\n
val PACK_ALIGNMENT: Int\n    val MAX_TEXTURE_SIZE: Int\n    val MAX_VIEWPORT_DIMS: Int\n
val SUBPIXEL_BITS: Int\n    val RED_BITS: Int\n    val GREEN_BITS: Int\n    val BLUE_BITS: Int\n
val ALPHA_BITS: Int\n    val DEPTH_BITS: Int\n    val STENCIL_BITS: Int\n    val
POLYGON_OFFSET_UNITS: Int\n    val POLYGON_OFFSET_FACTOR: Int\n    val
TEXTURE_BINDING_2D: Int\n    val SAMPLE_BUFFERS: Int\n    val SAMPLES: Int\n    val
SAMPLE_COVERAGE_VALUE: Int\n    val SAMPLE_COVERAGE_INVERT: Int\n    val
COMPRESSED_TEXTURE_FORMATS: Int\n    val DONT_CARE: Int\n    val FASTEST: Int\n    val
NICEST: Int\n    val GENERATE_MIPMAP_HINT: Int\n    val BYTE: Int\n    val UNSIGNED_BYTE:
Int\n    val SHORT: Int\n    val UNSIGNED_SHORT: Int\n    val INT: Int\n    val UNSIGNED_INT: Int\n
val FLOAT: Int\n    val DEPTH_COMPONENT: Int\n    val ALPHA: Int\n    val RGB: Int\n    val
RGBA: Int\n    val LUMINANCE: Int\n    val LUMINANCE_ALPHA: Int\n    val

```

UNSIGNED\_SHORT\_4\_4\_4\_4: Int\n val UNSIGNED\_SHORT\_5\_5\_5\_1: Int\n val  
 UNSIGNED\_SHORT\_5\_6\_5: Int\n val FRAGMENT\_SHADER: Int\n val VERTEX\_SHADER: Int\n  
 val MAX\_VERTEX\_ATTRIBS: Int\n val MAX\_VERTEX\_UNIFORM\_VECTORS: Int\n val  
 MAX\_VARYING\_VECTORS: Int\n val MAX\_COMBINED\_TEXTURE\_IMAGE\_UNITS: Int\n val  
 MAX\_VERTEX\_TEXTURE\_IMAGE\_UNITS: Int\n val MAX\_TEXTURE\_IMAGE\_UNITS: Int\n val  
 MAX\_FRAGMENT\_UNIFORM\_VECTORS: Int\n val SHADER\_TYPE: Int\n val DELETE\_STATUS:  
 Int\n val LINK\_STATUS: Int\n val VALIDATE\_STATUS: Int\n val ATTACHED\_SHADERS: Int\n  
 val ACTIVE\_UNIFORMS: Int\n val ACTIVE\_ATTRIBUTES: Int\n val  
 SHADING\_LANGUAGE\_VERSION: Int\n val CURRENT\_PROGRAM: Int\n val NEVER: Int\n val  
 LESS: Int\n val EQUAL: Int\n val LEQUAL: Int\n val GREATER: Int\n val NOTEQUAL: Int\n  
 val GEQUAL: Int\n val ALWAYS: Int\n val KEEP: Int\n val REPLACE: Int\n val INCR: Int\n  
 val DECR: Int\n val INVERT: Int\n val INCR\_WRAP: Int\n val DECR\_WRAP: Int\n val  
 VENDOR: Int\n val RENDERER: Int\n val VERSION: Int\n val NEAREST: Int\n val LINEAR:  
 Int\n val NEAREST\_MIPMAP\_NEAREST: Int\n val LINEAR\_MIPMAP\_NEAREST: Int\n val  
 NEAREST\_MIPMAP\_LINEAR: Int\n val LINEAR\_MIPMAP\_LINEAR: Int\n val  
 TEXTURE\_MAG\_FILTER: Int\n val TEXTURE\_MIN\_FILTER: Int\n val TEXTURE\_WRAP\_S: Int\n  
 val TEXTURE\_WRAP\_T: Int\n val TEXTURE\_2D: Int\n val TEXTURE: Int\n val  
 TEXTURE\_CUBE\_MAP: Int\n val TEXTURE\_BINDING\_CUBE\_MAP: Int\n val  
 TEXTURE\_CUBE\_MAP\_POSITIVE\_X: Int\n val TEXTURE\_CUBE\_MAP\_NEGATIVE\_X: Int\n val  
 TEXTURE\_CUBE\_MAP\_POSITIVE\_Y: Int\n val TEXTURE\_CUBE\_MAP\_NEGATIVE\_Y: Int\n val  
 TEXTURE\_CUBE\_MAP\_POSITIVE\_Z: Int\n val TEXTURE\_CUBE\_MAP\_NEGATIVE\_Z: Int\n val  
 MAX\_CUBE\_MAP\_TEXTURE\_SIZE: Int\n val TEXTURE0: Int\n val TEXTURE1: Int\n val  
 TEXTURE2: Int\n val TEXTURE3: Int\n val TEXTURE4: Int\n val TEXTURE5: Int\n val  
 TEXTURE6: Int\n val TEXTURE7: Int\n val TEXTURE8: Int\n val TEXTURE9: Int\n val  
 TEXTURE10: Int\n val TEXTURE11: Int\n val TEXTURE12: Int\n val TEXTURE13: Int\n val  
 TEXTURE14: Int\n val TEXTURE15: Int\n val TEXTURE16: Int\n val TEXTURE17: Int\n val  
 TEXTURE18: Int\n val TEXTURE19: Int\n val TEXTURE20: Int\n val TEXTURE21: Int\n val  
 TEXTURE22: Int\n val TEXTURE23: Int\n val TEXTURE24: Int\n val TEXTURE25: Int\n val  
 TEXTURE26: Int\n val TEXTURE27: Int\n val TEXTURE28: Int\n val TEXTURE29: Int\n val  
 TEXTURE30: Int\n val TEXTURE31: Int\n val ACTIVE\_TEXTURE: Int\n val REPEAT: Int\n  
 val CLAMP\_TO\_EDGE: Int\n val MIRRORED\_REPEAT: Int\n val FLOAT\_VEC2: Int\n val  
 FLOAT\_VEC3: Int\n val FLOAT\_VEC4: Int\n val INT\_VEC2: Int\n val INT\_VEC3: Int\n val  
 INT\_VEC4: Int\n val BOOL: Int\n val BOOL\_VEC2: Int\n val BOOL\_VEC3: Int\n val  
 BOOL\_VEC4: Int\n val FLOAT\_MAT2: Int\n val FLOAT\_MAT3: Int\n val FLOAT\_MAT4: Int\n  
 val SAMPLER\_2D: Int\n val SAMPLER\_CUBE: Int\n val VERTEX\_ATTRIB\_ARRAY\_ENABLED:  
 Int\n val VERTEX\_ATTRIB\_ARRAY\_SIZE: Int\n val VERTEX\_ATTRIB\_ARRAY\_STRIDE: Int\n  
 val VERTEX\_ATTRIB\_ARRAY\_TYPE: Int\n val VERTEX\_ATTRIB\_ARRAY\_NORMALIZED: Int\n  
 val VERTEX\_ATTRIB\_ARRAY\_POINTER: Int\n val VERTEX\_ATTRIB\_ARRAY\_BUFFER\_BINDING:  
 Int\n val IMPLEMENTATION\_COLOR\_READ\_TYPE: Int\n val  
 IMPLEMENTATION\_COLOR\_READ\_FORMAT: Int\n val COMPILE\_STATUS: Int\n val  
 LOW\_FLOAT: Int\n val MEDIUM\_FLOAT: Int\n val HIGH\_FLOAT: Int\n val LOW\_INT: Int\n  
 val MEDIUM\_INT: Int\n val HIGH\_INT: Int\n val FRAMEBUFFER: Int\n val RENDERBUFFER:  
 Int\n val RGBA4: Int\n val RGB5\_A1: Int\n val RGB565: Int\n val DEPTH\_COMPONENT16:  
 Int\n val STENCIL\_INDEX: Int\n val STENCIL\_INDEX8: Int\n val DEPTH\_STENCIL: Int\n val  
 RENDERBUFFER\_WIDTH: Int\n val RENDERBUFFER\_HEIGHT: Int\n val  
 RENDERBUFFER\_INTERNAL\_FORMAT: Int\n val RENDERBUFFER\_RED\_SIZE: Int\n val  
 RENDERBUFFER\_GREEN\_SIZE: Int\n val RENDERBUFFER\_BLUE\_SIZE: Int\n val  
 RENDERBUFFER\_ALPHA\_SIZE: Int\n val RENDERBUFFER\_DEPTH\_SIZE: Int\n val

```

RENDERBUFFER_STENCIL_SIZE: Int\n    val FRAMEBUFFER_ATTACHMENT_OBJECT_TYPE: Int\n
val FRAMEBUFFER_ATTACHMENT_OBJECT_NAME: Int\n    val
FRAMEBUFFER_ATTACHMENT_TEXTURE_LEVEL: Int\n    val
FRAMEBUFFER_ATTACHMENT_TEXTURE_CUBE_MAP_FACE: Int\n    val COLOR_ATTACHMENT0:
Int\n    val DEPTH_ATTACHMENT: Int\n    val STENCIL_ATTACHMENT: Int\n    val
DEPTH_STENCIL_ATTACHMENT: Int\n    val NONE: Int\n    val FRAMEBUFFER_COMPLETE: Int\n
val FRAMEBUFFER_INCOMPLETE_ATTACHMENT: Int\n    val
FRAMEBUFFER_INCOMPLETE_MISSING_ATTACHMENT: Int\n    val
FRAMEBUFFER_INCOMPLETE_DIMENSIONS: Int\n    val FRAMEBUFFER_UNSUPPORTED: Int\n
val FRAMEBUFFER_BINDING: Int\n    val RENDERBUFFER_BINDING: Int\n    val
MAX_RENDERBUFFER_SIZE: Int\n    val INVALID_FRAMEBUFFER_OPERATION: Int\n    val
UNPACK_FLIP_Y_WEBGL: Int\n    val UNPACK_PREMULTIPLY_ALPHA_WEBGL: Int\n    val
CONTEXT_LOST_WEBGL: Int\n    val UNPACK_COLORSPACE_CONVERSION_WEBGL: Int\n    val
BROWSER_DEFAULT_WEBGL: Int\n    }\n}\n\n/**\n * Exposes the JavaScript
[WebGLContextEvent](https://developer.mozilla.org/en/docs/Web/API/WebGLContextEvent) to Kotlin\n
*/\npublic external open class WebGLContextEvent(type: String, eventInit: WebGLContextEventInit =
definedExternally) : Event {\n    open val statusMessage: String\n\n    companion object {\n        val NONE: Short\n        val CAPTURING_PHASE: Short\n        val AT_TARGET: Short\n        val BUBBLING_PHASE: Short\n    }\n}\n\npublic external interface WebGLContextEventInit : EventInit {\n    var statusMessage: String? /* = \"\" */\n    get() = definedExternally\n    set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline
fun WebGLContextEventInit(statusMessage: String? = \"\", bubbles: Boolean? = false, cancelable: Boolean? = false,
composed: Boolean? = false): WebGLContextEventInit {\n    val o = js(\"({})\")\n    o[\"statusMessage\"] =
statusMessage\n    o[\"bubbles\"] = bubbles\n    o[\"cancelable\"] = cancelable\n    o[\"composed\"] = composed\n    return o\n}\n\n/**\n * Exposes the JavaScript
[ArrayBuffer](https://developer.mozilla.org/en/docs/Web/API/ArrayBuffer) to Kotlin\n
*/\npublic external open
class ArrayBuffer(length: Int) : BufferDataSource {\n    open val byteLength: Int\n    fun slice(begin: Int, end: Int =
definedExternally): ArrayBuffer\n\n    companion object {\n        fun isView(value: Any?): Boolean\n    }\n}\n\n/**\n * Exposes the JavaScript
[ArrayBufferView](https://developer.mozilla.org/en/docs/Web/API/ArrayBufferView) to Kotlin\n
*/\npublic
external interface ArrayBufferView : BufferDataSource {\n    val buffer: ArrayBuffer\n    val byteOffset: Int\n    val
byteLength: Int\n}\n\n/**\n * Exposes the JavaScript
[Int8Array](https://developer.mozilla.org/en/docs/Web/API/Int8Array) to Kotlin\n
*/\npublic external open class
Int8Array : ArrayBufferView {\n    constructor(length: Int)\n    constructor(array: Int8Array)\n    constructor(array:
Array<Byte>)\n    constructor(buffer: ArrayBuffer, byteOffset: Int = definedExternally, length: Int =
definedExternally)\n    open val length: Int\n    override val buffer: ArrayBuffer\n    override val byteOffset: Int\n
override val byteLength: Int\n    fun set(array: Int8Array, offset: Int = definedExternally)\n    fun set(array:
Array<Byte>, offset: Int = definedExternally)\n    fun subarray(start: Int, end: Int): Int8Array\n\n    companion
object {\n        val BYTES_PER_ELEMENT: Int\n    }\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator
fun Int8Array.get(index: Int): Byte = asDynamic()[index]\n\n@kotlin.internal.InlineOnly\npublic inline operator fun
Int8Array.set(index: Int, value: Byte) { asDynamic()[index] = value }\n\n/**\n * Exposes the JavaScript
[Uint8Array](https://developer.mozilla.org/en/docs/Web/API/Uint8Array) to Kotlin\n
*/\npublic external open class
Uint8Array : ArrayBufferView {\n    constructor(length: Int)\n    constructor(array: Uint8Array)\n
constructor(array: Array<Byte>)\n    constructor(buffer: ArrayBuffer, byteOffset: Int = definedExternally, length:
Int = definedExternally)\n    open val length: Int\n    override val buffer: ArrayBuffer\n    override val byteOffset:
Int\n    override val byteLength: Int\n    fun set(array: Uint8Array, offset: Int = definedExternally)\n    fun set(array:
Array<Byte>, offset: Int = definedExternally)\n    fun subarray(start: Int, end: Int): Uint8Array\n\n    companion
object {\n        val BYTES_PER_ELEMENT: Int\n    }\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator
fun Uint8Array.get(index: Int): Byte = asDynamic()[index]\n\n@kotlin.internal.InlineOnly\npublic inline operator

```

```

fun Uint8Array.set(index: Int, value: Byte) { asDynamic()[index] = value } \n\n/** \n * Exposes the JavaScript
[Uint8ClampedArray](https://developer.mozilla.org/en/docs/Web/API/Uint8ClampedArray) to Kotlin \n\npublic
external open class Uint8ClampedArray : ArrayBufferView { \n  constructor(length: Int) \n  constructor(array:
Uint8ClampedArray) \n  constructor(array: Array<Byte>) \n  constructor(buffer: ArrayBuffer, byteOffset: Int =
definedExternally, length: Int = definedExternally) \n  open val length: Int \n  override val buffer: ArrayBuffer \n
override val byteOffset: Int \n  override val byteLength: Int \n  fun set(array: Uint8ClampedArray, offset: Int =
definedExternally) \n  fun set(array: Array<Byte>, offset: Int = definedExternally) \n  fun subarray(start: Int, end:
Int): Uint8ClampedArray \n\n  companion object { \n    val BYTES_PER_ELEMENT: Int \n  } \n} \n\n@kotlin.internal.InlineOnly \npublic inline operator fun Uint8ClampedArray.get(index: Int): Byte =
asDynamic()[index] \n\n@kotlin.internal.InlineOnly \npublic inline operator fun Uint8ClampedArray.set(index: Int,
value: Byte) { asDynamic()[index] = value } \n\n/** \n * Exposes the JavaScript
[Int16Array](https://developer.mozilla.org/en/docs/Web/API/Int16Array) to Kotlin \n\npublic external open class
Int16Array : ArrayBufferView { \n  constructor(length: Int) \n  constructor(array: Int16Array) \n
constructor(array: Array<Short>) \n  constructor(buffer: ArrayBuffer, byteOffset: Int = definedExternally, length:
Int = definedExternally) \n  open val length: Int \n  override val buffer: ArrayBuffer \n  override val byteOffset:
Int \n  override val byteLength: Int \n  fun set(array: Int16Array, offset: Int = definedExternally) \n  fun set(array:
Array<Short>, offset: Int = definedExternally) \n  fun subarray(start: Int, end: Int): Int16Array \n\n  companion
object { \n    val BYTES_PER_ELEMENT: Int \n  } \n} \n\n@kotlin.internal.InlineOnly \npublic inline operator
fun Int16Array.get(index: Int): Short = asDynamic()[index] \n\n@kotlin.internal.InlineOnly \npublic inline operator
fun Int16Array.set(index: Int, value: Short) { asDynamic()[index] = value } \n\n/** \n * Exposes the JavaScript
[Uint16Array](https://developer.mozilla.org/en/docs/Web/API/Uint16Array) to Kotlin \n\npublic external open class
Uint16Array : ArrayBufferView { \n  constructor(length: Int) \n  constructor(array: Uint16Array) \n
constructor(array: Array<Short>) \n  constructor(buffer: ArrayBuffer, byteOffset: Int = definedExternally, length:
Int = definedExternally) \n  open val length: Int \n  override val buffer: ArrayBuffer \n  override val byteOffset:
Int \n  override val byteLength: Int \n  fun set(array: Uint16Array, offset: Int = definedExternally) \n  fun set(array:
Array<Short>, offset: Int = definedExternally) \n  fun subarray(start: Int, end: Int): Uint16Array \n\n  companion
object { \n    val BYTES_PER_ELEMENT: Int \n  } \n} \n\n@kotlin.internal.InlineOnly \npublic inline operator
fun Uint16Array.get(index: Int): Short = asDynamic()[index] \n\n@kotlin.internal.InlineOnly \npublic inline operator
fun Uint16Array.set(index: Int, value: Short) { asDynamic()[index] = value } \n\n/** \n * Exposes the JavaScript
[Int32Array](https://developer.mozilla.org/en/docs/Web/API/Int32Array) to Kotlin \n\npublic external open class
Int32Array : ArrayBufferView { \n  constructor(length: Int) \n  constructor(array: Int32Array) \n
constructor(array: Array<Int>) \n  constructor(buffer: ArrayBuffer, byteOffset: Int = definedExternally, length: Int
= definedExternally) \n  open val length: Int \n  override val buffer: ArrayBuffer \n  override val byteOffset: Int \n
override val byteLength: Int \n  fun set(array: Int32Array, offset: Int = definedExternally) \n  fun set(array:
Array<Int>, offset: Int = definedExternally) \n  fun subarray(start: Int, end: Int): Int32Array \n\n  companion object
{ \n    val BYTES_PER_ELEMENT: Int \n  } \n} \n\n@kotlin.internal.InlineOnly \npublic inline operator fun
Int32Array.get(index: Int): Int = asDynamic()[index] \n\n@kotlin.internal.InlineOnly \npublic inline operator fun
Int32Array.set(index: Int, value: Int) { asDynamic()[index] = value } \n\n/** \n * Exposes the JavaScript
[Uint32Array](https://developer.mozilla.org/en/docs/Web/API/Uint32Array) to Kotlin \n\npublic external open class
Uint32Array : ArrayBufferView { \n  constructor(length: Int) \n  constructor(array: Uint32Array) \n
constructor(array: Array<Int>) \n  constructor(buffer: ArrayBuffer, byteOffset: Int = definedExternally, length: Int
= definedExternally) \n  open val length: Int \n  override val buffer: ArrayBuffer \n  override val byteOffset: Int \n
override val byteLength: Int \n  fun set(array: Uint32Array, offset: Int = definedExternally) \n  fun set(array:
Array<Int>, offset: Int = definedExternally) \n  fun subarray(start: Int, end: Int): Uint32Array \n\n  companion
object { \n    val BYTES_PER_ELEMENT: Int \n  } \n} \n\n@kotlin.internal.InlineOnly \npublic inline operator
fun Uint32Array.get(index: Int): Int = asDynamic()[index] \n\n@kotlin.internal.InlineOnly \npublic inline operator
fun Uint32Array.set(index: Int, value: Int) { asDynamic()[index] = value } \n\n/** \n * Exposes the JavaScript
[Float32Array](https://developer.mozilla.org/en/docs/Web/API/Float32Array) to Kotlin \n\npublic external open

```

```

class Float32Array : ArrayBufferView {
    constructor(length: Int)
    constructor(array: Float32Array)
    constructor(array: Array<Float>)
    constructor(buffer: ArrayBuffer, byteOffset: Int = definedExternally, length: Int = definedExternally)
    open val length: Int
    override val buffer: ArrayBuffer
    override val byteOffset: Int
    override val byteLength: Int
    fun set(array: Float32Array, offset: Int = definedExternally)
    fun set(array: Array<Float>, offset: Int = definedExternally)
    fun subarray(start: Int, end: Int): Float32Array

    companion object {
        val BYTES_PER_ELEMENT: Int
    }

    @kotlin.internal.InlineOnly
    public inline operator fun Float32Array.get(index: Int): Float = asDynamic()[index]

    @kotlin.internal.InlineOnly
    public inline operator fun Float32Array.set(index: Int, value: Float) { asDynamic()[index] = value }

    /**
     * Exposes the JavaScript [Float64Array](https://developer.mozilla.org/en/docs/Web/API/Float64Array) to Kotlin
     */
    public external open class Float64Array : ArrayBufferView {
        constructor(length: Int)
        constructor(array: Float64Array)
        constructor(array: Array<Double>)
        constructor(buffer: ArrayBuffer, byteOffset: Int = definedExternally, length: Int = definedExternally)
        open val length: Int
        override val buffer: ArrayBuffer
        override val byteOffset: Int
        override val byteLength: Int
        fun set(array: Float64Array, offset: Int = definedExternally)
        fun set(array: Array<Double>, offset: Int = definedExternally)
        fun subarray(start: Int, end: Int): Float64Array

        companion object {
            val BYTES_PER_ELEMENT: Int
        }

        @kotlin.internal.InlineOnly
        public inline operator fun Float64Array.get(index: Int): Double = asDynamic()[index]

        @kotlin.internal.InlineOnly
        public inline operator fun Float64Array.set(index: Int, value: Double) { asDynamic()[index] = value }

        /**
         * Exposes the JavaScript [DataView](https://developer.mozilla.org/en/docs/Web/API/DataView) to Kotlin
         */
        public external open class DataView(buffer: ArrayBuffer, byteOffset: Int = definedExternally, byteLength: Int = definedExternally) :
            ArrayBufferView {
                override val buffer: ArrayBuffer
                override val byteOffset: Int
                override val byteLength: Int
                fun getInt8(byteOffset: Int): Byte
                fun getUint8(byteOffset: Int): Byte
                fun getInt16(byteOffset: Int, littleEndian: Boolean = definedExternally): Short
                fun getUint16(byteOffset: Int, littleEndian: Boolean = definedExternally): Short
                fun getInt32(byteOffset: Int, littleEndian: Boolean = definedExternally): Int
                fun getUint32(byteOffset: Int, littleEndian: Boolean = definedExternally): Int
                fun getFloat32(byteOffset: Int, littleEndian: Boolean = definedExternally): Float
                fun getFloat64(byteOffset: Int, littleEndian: Boolean = definedExternally): Double
                fun setInt8(byteOffset: Int, value: Byte)
                fun setUint8(byteOffset: Int, value: Byte)
                fun setInt16(byteOffset: Int, value: Short, littleEndian: Boolean = definedExternally)
                fun setUint16(byteOffset: Int, value: Short, littleEndian: Boolean = definedExternally)
                fun setInt32(byteOffset: Int, value: Int, littleEndian: Boolean = definedExternally)
                fun setUint32(byteOffset: Int, value: Int, littleEndian: Boolean = definedExternally)
                fun setFloat32(byteOffset: Int, value: Float, littleEndian: Boolean = definedExternally)
                fun setFloat64(byteOffset: Int, value: Double, littleEndian: Boolean = definedExternally)
            }

        @kotlin.internal.InlineOnly
        public external interface BufferDataSource

        @kotlin.internal.InlineOnly
        public external interface TexImageSource

        /**
         * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.
         * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.
         */
        /**
         * NOTE: THIS FILE IS AUTO-GENERATED, DO NOT EDIT!
         */
        See github.com/kotlin/dukat for details

        package org.w3c.dom.clipboard
        import kotlin.js.*
        import org.khronos.webgl.*
        import org.w3c.css.masking.*
        import org.w3c.dom.*
        import org.w3c.dom.css.*
        import org.w3c.dom.events.*
        import org.w3c.dom.mediacapture.*
        import org.w3c.dom.parsing.*
        import org.w3c.dom.pointerevents.*
        import org.w3c.dom.svg.*
        import org.w3c.dom.url.*
        import org.w3c.fetch.*
        import org.w3c.files.*
        import org.w3c.notifications.*
        import org.w3c.performance.*
        import org.w3c.workers.*
        import org.w3c.xhr.*

        @kotlin.internal.InlineOnly
        public external interface ClipboardEventInit : EventInit {
            var clipboardData: DataTransfer? = null
            fun get() = definedExternally
            fun set(value) = definedExternally
        }

        @kotlin.internal.InlineOnly
        public inline fun ClipboardEventInit(clipboardData: DataTransfer? = null, bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? = false): ClipboardEventInit {
            val o = js("{}")
            o["clipboardData"] = clipboardData
            o["bubbles"] = bubbles
            o["cancelable"] = cancelable
            o["composed"] = composed
            return o
        }

        /**
         * Exposes the JavaScript [ClipboardEvent](https://developer.mozilla.org/en/docs/Web/API/ClipboardEvent) to Kotlin
         */
        public external

```

```

open class ClipboardEvent(type: String, eventInitDict: ClipboardEventInit = definedExternally) : Event {
    open val clipboardData: DataTransfer?
    companion object {
        val NONE: Short
        val CAPTURING_PHASE: Short
        val AT_TARGET: Short
        val BUBBLING_PHASE: Short
    }
}

/** Exposes the JavaScript [Clipboard](https://developer.mozilla.org/en/docs/Web/API/Clipboard) to Kotlin
 * \npublic external abstract class Clipboard : EventTarget {
    fun read(): Promise<DataTransfer>
    fun readText(): Promise<String>
    fun write(data: DataTransfer): Promise<Unit>
    fun writeText(data: String): Promise<Unit>
}

public external interface ClipboardPermissionDescriptor {
    var allowWithoutGesture: Boolean? /* = false */
    fun get() = definedExternally
    fun set(value) = definedExternally
}

@kotlin.internal.InlineOnly
public inline fun ClipboardPermissionDescriptor(allowWithoutGesture: Boolean? = false): ClipboardPermissionDescriptor {
    val o = js("{}")
    o["allowWithoutGesture"] = allowWithoutGesture
    return o
}

/* Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.
 * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.
 * \n// NOTE: THIS FILE IS AUTO-GENERATED, DO NOT EDIT!
 * \n// See github.com/kotlin/dukat for details
 * \npackage org.w3c.dom.css
import kotlin.js
import org.khronos.webgl
import org.w3c.css.masking
import org.w3c.dom
import org.w3c.dom.clipboard
import org.w3c.dom.events
import org.w3c.dom.mediacapture
import org.w3c.dom.parsing
import org.w3c.dom.pointerevents
import org.w3c.dom.svg
import org.w3c.dom.url
import org.w3c.fetch
import org.w3c.files
import org.w3c.notifications
import org.w3c.performance
import org.w3c.workers
import org.w3c.xhr
}

public external abstract class MediaList : ItemArrayLike<String> {
    open var mediaText: String
    fun appendMedium(medium: String)
    fun deleteMedium(medium: String)
    override fun item(index: Int): String?
}

@kotlin.internal.InlineOnly
public inline operator fun MediaList.get(index: Int): String? = asDynamic()[index]

/** Exposes the JavaScript [StyleSheet](https://developer.mozilla.org/en/docs/Web/API/StyleSheet) to Kotlin
 * \npublic external abstract class StyleSheet {
    open val type: String
    open val href: String?
    open val ownerNode: UnionElementOrProcessingInstruction?
    open val parentStyleSheet: StyleSheet?
    open val title: String?
    open val media: MediaList
    open var disabled: Boolean
}

/** Exposes the JavaScript [CSSStyleSheet](https://developer.mozilla.org/en/docs/Web/API/CSSStyleSheet) to Kotlin
 * \npublic external abstract class CSSStyleSheet : StyleSheet {
    open val ownerRule: CSSRule?
    open val cssRules: CSSRuleList
    fun insertRule(rule: String, index: Int): Int
    fun deleteRule(index: Int)
}

/** Exposes the JavaScript [StyleSheetList](https://developer.mozilla.org/en/docs/Web/API/StyleSheetList) to Kotlin
 * \npublic external abstract class StyleSheetList : ItemArrayLike<StyleSheet> {
    override fun item(index: Int): StyleSheet?
}

@kotlin.internal.InlineOnly
public inline operator fun StyleSheetList.get(index: Int): StyleSheet? = asDynamic()[index]

/** Exposes the JavaScript [LinkStyle](https://developer.mozilla.org/en/docs/Web/API/LinkStyle) to Kotlin
 * \npublic external interface LinkStyle {
    val sheet: StyleSheet?
    fun get() = definedExternally
}

/** Exposes the JavaScript [CSSRuleList](https://developer.mozilla.org/en/docs/Web/API/CSSRuleList) to Kotlin
 * \npublic external abstract class CSSRuleList : ItemArrayLike<CSSRule> {
    override fun item(index: Int): CSSRule?
}

@kotlin.internal.InlineOnly
public inline operator fun CSSRuleList.get(index: Int): CSSRule? = asDynamic()[index]

/** Exposes the JavaScript [CSSRule](https://developer.mozilla.org/en/docs/Web/API/CSSRule) to Kotlin
 * \npublic external abstract class CSSRule {
    open val type: Short
    open var cssText: String
    open val parentRule: CSSRule?
    open val parentStyleSheet: CSSStyleSheet?
    companion object {
        val STYLE_RULE: Short
        val CHARSET_RULE: Short
        val IMPORT_RULE: Short
        val MEDIA_RULE: Short
        val FONT_FACE_RULE: Short
        val PAGE_RULE: Short
        val MARGIN_RULE: Short
        val NAMESPACE_RULE: Short
    }
}

/** Exposes the JavaScript [CSSStyleRule](https://developer.mozilla.org/en/docs/Web/API/CSSStyleRule) to Kotlin
 * \npublic external abstract class CSSStyleRule : CSSRule {
    open var selectorText: String
    open val style:

```

```

CSSStyleDeclaration companion object {
    val STYLE_RULE: Short
    val CHARSET_RULE: Short
    val IMPORT_RULE: Short
    val MEDIA_RULE: Short
    val FONT_FACE_RULE: Short
    val PAGE_RULE: Short
    val MARGIN_RULE: Short
    val NAMESPACE_RULE: Short
}

public external abstract class CSSImportRule : CSSRule {
    open val href: String
    open val media: MediaList
    open val styleSheet: CSSStyleSheet
}

companion object {
    val STYLE_RULE: Short
    val CHARSET_RULE: Short
    val IMPORT_RULE: Short
    val MEDIA_RULE: Short
    val FONT_FACE_RULE: Short
    val PAGE_RULE: Short
    val MARGIN_RULE: Short
    val NAMESPACE_RULE: Short
}

Exposes the JavaScript [CSSGroupingRule](https://developer.mozilla.org/en/docs/Web/API/CSSGroupingRule) to Kotlin

public external abstract class CSSGroupingRule : CSSRule {
    open val cssRules: CSSRuleList
    fun insertRule(rule: String, index: Int): Int
    fun deleteRule(index: Int)
}

companion object {
    val STYLE_RULE: Short
    val CHARSET_RULE: Short
    val IMPORT_RULE: Short
    val MEDIA_RULE: Short
    val FONT_FACE_RULE: Short
    val PAGE_RULE: Short
    val MARGIN_RULE: Short
    val NAMESPACE_RULE: Short
}

Exposes the JavaScript [CSSMediaRule](https://developer.mozilla.org/en/docs/Web/API/CSSMediaRule) to Kotlin

public external abstract class CSSMediaRule : CSSGroupingRule {
    open val media: MediaList
}

companion object {
    val STYLE_RULE: Short
    val CHARSET_RULE: Short
    val IMPORT_RULE: Short
    val MEDIA_RULE: Short
    val FONT_FACE_RULE: Short
    val PAGE_RULE: Short
    val MARGIN_RULE: Short
    val NAMESPACE_RULE: Short
}

Exposes the JavaScript [CSSPageRule](https://developer.mozilla.org/en/docs/Web/API/CSSPageRule) to Kotlin

public external abstract class CSSPageRule : CSSGroupingRule {
    open var selectorText: String
    open val style: CSSStyleDeclaration
}

companion object {
    val STYLE_RULE: Short
    val CHARSET_RULE: Short
    val IMPORT_RULE: Short
    val MEDIA_RULE: Short
    val FONT_FACE_RULE: Short
    val PAGE_RULE: Short
    val MARGIN_RULE: Short
    val NAMESPACE_RULE: Short
}

public external abstract class CSSMarginRule : CSSRule {
    open val name: String
    open val style: CSSStyleDeclaration
}

companion object {
    val STYLE_RULE: Short
    val CHARSET_RULE: Short
    val IMPORT_RULE: Short
    val MEDIA_RULE: Short
    val FONT_FACE_RULE: Short
    val PAGE_RULE: Short
    val MARGIN_RULE: Short
    val NAMESPACE_RULE: Short
}

Exposes the JavaScript [CSSNamespaceRule](https://developer.mozilla.org/en/docs/Web/API/CSSNamespaceRule) to Kotlin

public external abstract class CSSNamespaceRule : CSSRule {
    open val namespaceURI: String
    open val prefix: String
}

companion object {
    val STYLE_RULE: Short
    val CHARSET_RULE: Short
    val IMPORT_RULE: Short
    val MEDIA_RULE: Short
    val FONT_FACE_RULE: Short
    val PAGE_RULE: Short
    val MARGIN_RULE: Short
    val NAMESPACE_RULE: Short
}

Exposes the JavaScript [CSSStyleDeclaration](https://developer.mozilla.org/en/docs/Web/API/CSSStyleDeclaration) to Kotlin

public external abstract class CSSStyleDeclaration : ItemArrayLike<String> {
    open var cssText: String
    open val parentRule: CSSRule?
    open var cssFloat: String
    open var alignContent: String
    open var alignItems: String
    open var alignSelf: String
    open var animation: String
    open var animationDelay: String
    open var animationDirection: String
    open var animationDuration: String
    open var animationFillMode: String
    open var animationIterationCount: String
    open var animationName: String
    open var animationPlayState: String
    open var animationTimingFunction: String
    open var backfaceVisibility: String
    open var background: String
    open var backgroundAttachment: String
    open var backgroundClip: String
    open var backgroundColor: String
    open var backgroundImage: String
    open var backgroundOrigin: String
    open var backgroundPosition: String
    open var backgroundRepeat: String
    open var backgroundSize: String
    open var border: String
    open var borderBottom: String
    open var borderBottomColor: String
    open var borderBottomLeftRadius: String
    open var borderBottomRightRadius: String
    open var borderBottomStyle: String
    open var borderBottomWidth: String
    open var borderCollapse: String
    open var borderColor:

```



String\n open var borderImage: String\n open var borderImageOutset: String\n open var borderImageRepeat:  
String\n open var borderImageSlice: String\n open var borderImageSource: String\n open var  
borderImageWidth: String\n open var borderLeft: String\n open var borderLeftColor: String\n open var  
borderLeftStyle: String\n open var borderLeftWidth: String\n open var borderRadius: String\n open var  
borderRight: String\n open var borderRightColor: String\n open var borderRightStyle: String\n open var  
borderRightWidth: String\n open var borderSpacing: String\n open var borderStyle: String\n open var  
borderTop: String\n open var borderTopColor: String\n open var borderTopLeftRadius: String\n open var  
borderTopRightRadius: String\n open var borderTopStyle: String\n open var borderTopWidth: String\n open  
var borderWidth: String\n open var bottom: String\n open var boxDecorationBreak: String\n open var  
boxShadow: String\n open var boxSizing: String\n open var breakAfter: String\n open var breakBefore:  
String\n open var breakInside: String\n open var captionSide: String\n open var clear: String\n open var clip:  
String\n open var color: String\n open var columnCount: String\n open var columnFill: String\n open var  
columnGap: String\n open var columnRule: String\n open var columnRuleColor: String\n open var  
columnRuleStyle: String\n open var columnRuleWidth: String\n open var columnSpan: String\n open var  
columnWidth: String\n open var columns: String\n open var content: String\n open var counterIncrement:  
String\n open var counterReset: String\n open var cursor: String\n open var direction: String\n open var  
display: String\n open var emptyCells: String\n open var filter: String\n open var flex: String\n open var  
flexBasis: String\n open var flexDirection: String\n open var flexFlow: String\n open var flexGrow: String\n  
open var flexShrink: String\n open var flexWrap: String\n open var font: String\n open var fontFamily:  
String\n open var fontFeatureSettings: String\n open var fontKerning: String\n open var  
fontLanguageOverride: String\n open var fontSize: String\n open var fontSizeAdjust: String\n open var  
fontStretch: String\n open var fontStyle: String\n open var fontSynthesis: String\n open var fontVariant:  
String\n open var fontVariantAlternates: String\n open var fontVariantCaps: String\n open var  
fontVariantEastAsian: String\n open var fontVariantLigatures: String\n open var fontVariantNumeric: String\n  
open var fontVariantPosition: String\n open var fontWeight: String\n open var hangingPunctuation: String\n  
open var height: String\n open var hyphens: String\n open var imageOrientation: String\n open var  
imageRendering: String\n open var imageResolution: String\n open var imeMode: String\n open var  
justifyContent: String\n open var left: String\n open var letterSpacing: String\n open var lineBreak: String\n  
open var lineHeight: String\n open var listStyle: String\n open var listStyleImage: String\n open var  
listStylePosition: String\n open var listStyleType: String\n open var margin: String\n open var marginBottom:  
String\n open var marginLeft: String\n open var marginRight: String\n open var marginTop: String\n open  
var mark: String\n open var markAfter: String\n open var markBefore: String\n open var marks: String\n  
open var marqueeDirection: String\n open var marqueePlayCount: String\n open var marqueeSpeed: String\n  
open var marqueeStyle: String\n open var mask: String\n open var maskType: String\n open var maxHeight:  
String\n open var maxWidth: String\n open var minHeight: String\n open var minWidth: String\n open var  
navDown: String\n open var navIndex: String\n open var navLeft: String\n open var navRight: String\n open  
var navUp: String\n open var objectFit: String\n open var objectPosition: String\n open var opacity: String\n  
open var order: String\n open var orphans: String\n open var outline: String\n open var outlineColor: String\n  
open var outlineOffset: String\n open var outlineStyle: String\n open var outlineWidth: String\n open var  
overflowWrap: String\n open var overflowX: String\n open var overflowY: String\n open var padding:  
String\n open var paddingBottom: String\n open var paddingLeft: String\n open var paddingRight: String\n  
open var paddingTop: String\n open var pageBreakAfter: String\n open var pageBreakBefore: String\n open  
var pageBreakInside: String\n open var perspective: String\n open var perspectiveOrigin: String\n open var  
phonemes: String\n open var position: String\n open var quotes: String\n open var resize: String\n open var  
rest: String\n open var restAfter: String\n open var restBefore: String\n open var right: String\n open var  
tabSize: String\n open var tableLayout: String\n open var textAlign: String\n open var textAlignLast: String\n  
open var textCombineUpright: String\n open var textDecoration: String\n open var textDecorationColor:  
String\n open var textDecorationLine: String\n open var textDecorationStyle: String\n open var textIndent:

```

String\n open var textJustify: String\n open var textOrientation: String\n open var textOverflow: String\n
open var textShadow: String\n open var textTransform: String\n open var textUnderlinePosition: String\n open
var top: String\n open var transform: String\n open var transformOrigin: String\n open var transformStyle:
String\n open var transition: String\n open var transitionDelay: String\n open var transitionDuration: String\n
open var transitionProperty: String\n open var transitionTimingFunction: String\n open var unicodeBidi:
String\n open var verticalAlign: String\n open var visibility: String\n open var voiceBalance: String\n open
var voiceDuration: String\n open var voicePitch: String\n open var voicePitchRange: String\n open var
voiceRate: String\n open var voiceStress: String\n open var voiceVolume: String\n open var whiteSpace:
String\n open var widows: String\n open var width: String\n open var wordBreak: String\n open var
wordSpacing: String\n open var wordWrap: String\n open var writingMode: String\n open var zIndex: String\n
open var _dashed_attribute: String\n open var _camel_cased_attribute: String\n open var
_webkit_cased_attribute: String\n fun getPropertyValue(property: String): String\n fun
getPropertyPriority(property: String): String\n fun setProperty(property: String, value: String, priority: String =
definedExternally)\n fun setPropertyValue(property: String, value: String)\n fun setPropertyPriority(property:
String, priority: String)\n fun removeProperty(property: String): String\n override fun item(index: Int):
String\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun CSSStyleDeclaration.get(index: Int): String? =
asDynamic()[index]\n\npublic external interface ElementCSSInlineStyle {\n val style:
CSSStyleDeclaration\n}\n\n/**\n * Exposes the JavaScript
[CSS](https://developer.mozilla.org/en/docs/Web/API/CSS) to Kotlin\n *\n\npublic external abstract class CSS {\n
companion object {\n fun escape(ident: String): String\n }\n}\n\npublic external interface
UnionElementOrProcessingInstruction", "/*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming
Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n *\n\n// NOTE: THIS FILE IS AUTO-GENERATED, DO NOT EDIT!\n\n// See
github.com/kotlin/dukat for details\n\npackage org.w3c.dom.events\n\nimport kotlin.js.*\nimport
org.khronos.webgl.*\nimport org.w3c.css.masking.*\nimport org.w3c.dom.*\nimport
org.w3c.dom.clipboard.*\nimport org.w3c.dom.css.*\nimport org.w3c.dom.mediacapture.*\nimport
org.w3c.dom.parsing.*\nimport org.w3c.dom.pointerevents.*\nimport org.w3c.dom.svg.*\nimport
org.w3c.dom.url.*\nimport org.w3c.fetch.*\nimport org.w3c.files.*\nimport org.w3c.notifications.*\nimport
org.w3c.performance.*\nimport org.w3c.workers.*\nimport org.w3c.xhr.*\n\n/**\n * Exposes the JavaScript
[UIEvent](https://developer.mozilla.org/en/docs/Web/API/UIEvent) to Kotlin\n *\n\npublic external open class
UIEvent(type: String, eventInitDict: UIEventInit = definedExternally) : Event {\n open val view: Window?\n
open val detail: Int\n\n companion object {\n val NONE: Short\n val CAPTURING_PHASE: Short\n
val AT_TARGET: Short\n val BUBBLING_PHASE: Short\n }\n}\n\npublic external interface UIEventInit :
EventInit {\n var view: Window? /* = null */\n get() = definedExternally\n set(value) =
definedExternally\n var detail: Int? /* = 0 */\n get() = definedExternally\n set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun UIEventInit(view: Window? = null, detail:
Int? = 0, bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? = false): UIEventInit {\n
val o = js("{}")\n o["view"] = view\n o["detail"] = detail\n o["bubbles"] = bubbles\n o["cancelable"]
= cancelable\n o["composed"] = composed\n return o\n}\n\n/**\n * Exposes the JavaScript
[FocusEvent](https://developer.mozilla.org/en/docs/Web/API/FocusEvent) to Kotlin\n *\n\npublic external open class
FocusEvent(type: String, eventInitDict: FocusEventInit = definedExternally) : UIEvent {\n open val relatedTarget:
EventTarget?\n\n companion object {\n val NONE: Short\n val CAPTURING_PHASE: Short\n val
AT_TARGET: Short\n val BUBBLING_PHASE: Short\n }\n}\n\npublic external interface FocusEventInit :
UIEventInit {\n var relatedTarget: EventTarget? /* = null */\n get() = definedExternally\n set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun FocusEventInit(relatedTarget: EventTarget?
= null, view: Window? = null, detail: Int? = 0, bubbles: Boolean? = false, cancelable: Boolean? = false, composed:
Boolean? = false): FocusEventInit {\n val o = js("{}")\n o["relatedTarget"] = relatedTarget\n o["view"] =
view\n o["detail"] = detail\n o["bubbles"] = bubbles\n o["cancelable"] = cancelable\n o["composed"] =

```

```

composed\n    return o\n}\n\n/**\n * Exposes the JavaScript
[MouseEvent](https://developer.mozilla.org/en/docs/Web/API/MouseEvent) to Kotlin\n */\npublic external open
class MouseEvent(type: String, eventInitDict: MouseEventInit = definedExternally) : UIEvent,
UnionElementOrMouseEvent {\n    open val screenX: Int\n    open val screenY: Int\n    open val clientX: Int\n
open val clientY: Int\n    open val ctrlKey: Boolean\n    open val shiftKey: Boolean\n    open val altKey: Boolean\n
open val metaKey: Boolean\n    open val button: Short\n    open val buttons: Short\n    open val relatedTarget:
EventTarget?\n    open val region: String?\n    open val pageX: Double\n    open val pageY: Double\n    open val x:
Double\n    open val y: Double\n    open val offsetX: Double\n    open val offsetY: Double\n    fun
getModifierState(keyArg: String): Boolean\n\n    companion object {\n        val NONE: Short\n        val
CAPTURING_PHASE: Short\n        val AT_TARGET: Short\n        val BUBBLING_PHASE: Short\n
}\n}\n\npublic external interface MouseEventInit : EventModifierInit {\n    var screenX: Int? /* = 0 */\n        get() =
definedExternally\n        set(value) = definedExternally\n    var screenY: Int? /* = 0 */\n        get() =
definedExternally\n        set(value) = definedExternally\n    var clientX: Int? /* = 0 */\n        get() =
definedExternally\n        set(value) = definedExternally\n    var clientY: Int? /* = 0 */\n        get() =
definedExternally\n        set(value) = definedExternally\n    var button: Short? /* = 0 */\n        get() =
definedExternally\n        set(value) = definedExternally\n    var buttons: Short? /* = 0 */\n        get() =
definedExternally\n        set(value) = definedExternally\n    var relatedTarget: EventTarget? /* = null */\n        get()
= definedExternally\n        set(value) = definedExternally\n    var region: String? /* = null */\n        get() =
definedExternally\n        set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
MouseEventInit(screenX: Int? = 0, screenY: Int? = 0, clientX: Int? = 0, clientY: Int? = 0, button: Short? = 0, buttons:
Short? = 0, relatedTarget: EventTarget? = null, region: String? = null, ctrlKey: Boolean? = false, shiftKey: Boolean?
= false, altKey: Boolean? = false, metaKey: Boolean? = false, modifierAltGraph: Boolean? = false,
modifierCapsLock: Boolean? = false, modifierFn: Boolean? = false, modifierFnLock: Boolean? = false,
modifierHyper: Boolean? = false, modifierNumLock: Boolean? = false, modifierScrollLock: Boolean? = false,
modifierSuper: Boolean? = false, modifierSymbol: Boolean? = false, modifierSymbolLock: Boolean? = false, view:
Window? = null, detail: Int? = 0, bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? =
false): MouseEventInit {\n    val o = js("{}")\n    o["screenX"] = screenX\n    o["screenY"] = screenY\n
o["clientX"] = clientX\n    o["clientY"] = clientY\n    o["button"] = button\n    o["buttons"] = buttons\n
o["relatedTarget"] = relatedTarget\n    o["region"] = region\n    o["ctrlKey"] = ctrlKey\n    o["shiftKey"] =
shiftKey\n    o["altKey"] = altKey\n    o["metaKey"] = metaKey\n    o["modifierAltGraph"] =
modifierAltGraph\n    o["modifierCapsLock"] = modifierCapsLock\n    o["modifierFn"] = modifierFn\n
o["modifierFnLock"] = modifierFnLock\n    o["modifierHyper"] = modifierHyper\n    o["modifierNumLock"] =
modifierNumLock\n    o["modifierScrollLock"] = modifierScrollLock\n    o["modifierSuper"] = modifierSuper\n
o["modifierSymbol"] = modifierSymbol\n    o["modifierSymbolLock"] = modifierSymbolLock\n    o["view"] =
view\n    o["detail"] = detail\n    o["bubbles"] = bubbles\n    o["cancelable"] = cancelable\n    o["composed"] =
composed\n    return o\n}\n\npublic external interface EventModifierInit : UIEventInit {\n    var ctrlKey: Boolean?
/* = false */\n        get() = definedExternally\n        set(value) = definedExternally\n    var shiftKey: Boolean? /* =
false */\n        get() = definedExternally\n        set(value) = definedExternally\n    var altKey: Boolean? /* = false
*/\n        get() = definedExternally\n        set(value) = definedExternally\n    var metaKey: Boolean? /* = false */\n
        get() = definedExternally\n        set(value) = definedExternally\n    var modifierAltGraph: Boolean? /* = false */\n
        get() = definedExternally\n        set(value) = definedExternally\n    var modifierCapsLock: Boolean? /* = false
*/\n        get() = definedExternally\n        set(value) = definedExternally\n    var modifierFn: Boolean? /* = false */\n
        get() = definedExternally\n        set(value) = definedExternally\n    var modifierFnLock: Boolean? /* = false */\n
        get() = definedExternally\n        set(value) = definedExternally\n    var modifierHyper: Boolean? /* = false */\n
        get() = definedExternally\n        set(value) = definedExternally\n    var modifierNumLock: Boolean? /* = false */\n
        get() = definedExternally\n        set(value) = definedExternally\n    var modifierScrollLock: Boolean? /* = false
*/\n        get() = definedExternally\n        set(value) = definedExternally\n    var modifierSuper: Boolean? /* = false
*/\n        get() = definedExternally\n        set(value) = definedExternally\n    var modifierSymbol: Boolean? /* = false
*/\n        get() = definedExternally\n        set(value) = definedExternally\n

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*/\n    get() = definedExternally\n    set(value) = definedExternally\n    var modifierSymbolLock: Boolean? /* =
false */\n    get() = definedExternally\n    set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun EventModifierInit(ctrlKey: Boolean? =
false, shiftKey: Boolean? = false, altKey: Boolean? = false, metaKey: Boolean? = false, modifierAltGraph:
Boolean? = false, modifierCapsLock: Boolean? = false, modifierFn: Boolean? = false, modifierFnLock: Boolean? =
false, modifierHyper: Boolean? = false, modifierNumLock: Boolean? = false, modifierScrollLock: Boolean? = false,
modifierSuper: Boolean? = false, modifierSymbol: Boolean? = false, modifierSymbolLock: Boolean? = false, view:
Window? = null, detail: Int? = 0, bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? =
false): EventModifierInit {\n    val o = js("{}")\n    o["ctrlKey"] = ctrlKey\n    o["shiftKey"] = shiftKey\n
o["altKey"] = altKey\n    o["metaKey"] = metaKey\n    o["modifierAltGraph"] = modifierAltGraph\n
o["modifierCapsLock"] = modifierCapsLock\n    o["modifierFn"] = modifierFn\n    o["modifierFnLock"] =
modifierFnLock\n    o["modifierHyper"] = modifierHyper\n    o["modifierNumLock"] = modifierNumLock\n
o["modifierScrollLock"] = modifierScrollLock\n    o["modifierSuper"] = modifierSuper\n
o["modifierSymbol"] = modifierSymbol\n    o["modifierSymbolLock"] = modifierSymbolLock\n    o["view"] =
view\n    o["detail"] = detail\n    o["bubbles"] = bubbles\n    o["cancelable"] = cancelable\n    o["composed"] =
composed\n    return o\n}\n\n/**\n * Exposes the JavaScript
[WheelEvent](https://developer.mozilla.org/en/docs/Web/API/WheelEvent) to Kotlin\n */\npublic external open
class WheelEvent(type: String, eventInitDict: WheelEventInit = definedExternally) : MouseEvent {\n    open val
deltaX: Double\n    open val deltaY: Double\n    open val deltaZ: Double\n    open val deltaMode: Int\n\n    companion object {\n        val DOM_DELTA_PIXEL: Int\n        val DOM_DELTA_LINE: Int\n        val
DOM_DELTA_PAGE: Int\n        val NONE: Short\n        val CAPTURING_PHASE: Short\n        val
AT_TARGET: Short\n        val BUBBLING_PHASE: Short\n    }\n\n    public external interface WheelEventInit :
MouseEventInit {\n        var deltaX: Double? /* = 0.0 */\n            get() = definedExternally\n            set(value) =
definedExternally\n        var deltaY: Double? /* = 0.0 */\n            get() = definedExternally\n            set(value) =
definedExternally\n        var deltaZ: Double? /* = 0.0 */\n            get() = definedExternally\n            set(value) =
definedExternally\n        var deltaMode: Int? /* = 0 */\n            get() = definedExternally\n            set(value) =
definedExternally\n    }\n\n    @kotlin.internal.InlineOnly\n    public inline fun WheelEventInit(deltaX: Double? = 0.0,
deltaY: Double? = 0.0, deltaZ: Double? = 0.0, deltaMode: Int? = 0, screenX: Int? = 0, screenY: Int? = 0, clientX:
Int? = 0, clientY: Int? = 0, button: Short? = 0, buttons: Short? = 0, relatedTarget: EventTarget? = null, region:
String? = null, ctrlKey: Boolean? = false, shiftKey: Boolean? = false, altKey: Boolean? = false, metaKey: Boolean? =
false, modifierAltGraph: Boolean? = false, modifierCapsLock: Boolean? = false, modifierFn: Boolean? = false,
modifierFnLock: Boolean? = false, modifierHyper: Boolean? = false, modifierNumLock: Boolean? = false,
modifierScrollLock: Boolean? = false, modifierSuper: Boolean? = false, modifierSymbol: Boolean? = false,
modifierSymbolLock: Boolean? = false, view: Window? = null, detail: Int? = 0, bubbles: Boolean? = false,
cancelable: Boolean? = false, composed: Boolean? = false): WheelEventInit {\n        val o = js("{}")\n
o["deltaX"] = deltaX\n        o["deltaY"] = deltaY\n        o["deltaZ"] = deltaZ\n        o["deltaMode"] = deltaMode\n
o["screenX"] = screenX\n        o["screenY"] = screenY\n        o["clientX"] = clientX\n        o["clientY"] = clientY\n
o["button"] = button\n        o["buttons"] = buttons\n        o["relatedTarget"] = relatedTarget\n        o["region"] =
region\n        o["ctrlKey"] = ctrlKey\n        o["shiftKey"] = shiftKey\n        o["altKey"] = altKey\n        o["metaKey"] =
metaKey\n        o["modifierAltGraph"] = modifierAltGraph\n        o["modifierCapsLock"] = modifierCapsLock\n
o["modifierFn"] = modifierFn\n        o["modifierFnLock"] = modifierFnLock\n        o["modifierHyper"] =
modifierHyper\n        o["modifierNumLock"] = modifierNumLock\n        o["modifierScrollLock"] =
modifierScrollLock\n        o["modifierSuper"] = modifierSuper\n        o["modifierSymbol"] = modifierSymbol\n
o["modifierSymbolLock"] = modifierSymbolLock\n        o["view"] = view\n        o["detail"] = detail\n
o["bubbles"] = bubbles\n        o["cancelable"] = cancelable\n        o["composed"] = composed\n        return
o\n    }\n\n    /**\n     * Exposes the JavaScript [InputEvent](https://developer.mozilla.org/en/docs/Web/API/InputEvent) to
Kotlin\n     */\n    public external open class InputEvent(type: String, eventInitDict: InputEventInit = definedExternally) :
UIEvent {\n        open val data: String\n        open val isComposing: Boolean\n\n        companion object {\n            val NONE:

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Short\n    val CAPTURING_PHASE: Short\n    val AT_TARGET: Short\n    val BUBBLING_PHASE:
Short\n } \n\npublic external interface InputEventInit : UIEventInit {\n    var data: String? /* = \"\" */\n    get() = definedExternally\n    set(value) = definedExternally\n    var isComposing: Boolean? /* = false */\n    get() = definedExternally\n    set(value) = definedExternally\n} \n\n@kotlin.internal.InlineOnly\npublic inline fun
InputEventInit(data: String? = \"\", isComposing: Boolean? = false, view: Window? = null, detail: Int? = 0, bubbles:
Boolean? = false, cancelable: Boolean? = false, composed: Boolean? = false): InputEventInit {\n    val o =
js(\"({})\")\n    o[\"data\"] = data\n    o[\"isComposing\"] = isComposing\n    o[\"view\"] = view\n    o[\"detail\"] =
detail\n    o[\"bubbles\"] = bubbles\n    o[\"cancelable\"] = cancelable\n    o[\"composed\"] = composed\n    return
o\n} \n\n/**\n * Exposes the JavaScript
[KeyboardEvent](https://developer.mozilla.org/en/docs/Web/API/KeyboardEvent) to Kotlin\n */\npublic external
open class KeyboardEvent(type: String, eventInitDict: KeyboardEventInit = definedExternally) : UIEvent {\n
open val key: String\n    open val code: String\n    open val location: Int\n    open val ctrlKey: Boolean\n    open val
shiftKey: Boolean\n    open val altKey: Boolean\n    open val metaKey: Boolean\n    open val repeat: Boolean\n
open val isComposing: Boolean\n    open val charCode: Int\n    open val keyCode: Int\n    open val which: Int\n
fun getModifierState(keyArg: String): Boolean\n\n    companion object {\n        val
DOM_KEY_LOCATION_STANDARD: Int\n        val DOM_KEY_LOCATION_LEFT: Int\n        val
DOM_KEY_LOCATION_RIGHT: Int\n        val DOM_KEY_LOCATION_NUMPAD: Int\n        val NONE:
Short\n        val CAPTURING_PHASE: Short\n        val AT_TARGET: Short\n        val BUBBLING_PHASE:
Short\n    } \n\npublic external interface KeyboardEventInit : EventModifierInit {\n    var key: String? /* = \"\"
*/\n    get() = definedExternally\n    set(value) = definedExternally\n    var code: String? /* = \"\" */\n    get()
= definedExternally\n    set(value) = definedExternally\n    var location: Int? /* = 0 */\n    get() =
definedExternally\n    set(value) = definedExternally\n    var repeat: Boolean? /* = false */\n    get() =
definedExternally\n    set(value) = definedExternally\n    var isComposing: Boolean? /* = false */\n    get() =
definedExternally\n    set(value) = definedExternally\n} \n\n@kotlin.internal.InlineOnly\npublic inline fun
KeyboardEventInit(key: String? = \"\", code: String? = \"\", location: Int? = 0, repeat: Boolean? = false,
isComposing: Boolean? = false, ctrlKey: Boolean? = false, shiftKey: Boolean? = false, altKey: Boolean? = false,
metaKey: Boolean? = false, modifierAltGraph: Boolean? = false, modifierCapsLock: Boolean? = false, modifierFn:
Boolean? = false, modifierFnLock: Boolean? = false, modifierHyper: Boolean? = false, modifierNumLock:
Boolean? = false, modifierScrollLock: Boolean? = false, modifierSuper: Boolean? = false, modifierSymbol:
Boolean? = false, modifierSymbolLock: Boolean? = false, view: Window? = null, detail: Int? = 0, bubbles:
Boolean? = false, cancelable: Boolean? = false, composed: Boolean? = false): KeyboardEventInit {\n    val o =
js(\"({})\")\n    o[\"key\"] = key\n    o[\"code\"] = code\n    o[\"location\"] = location\n    o[\"repeat\"] = repeat\n
o[\"isComposing\"] = isComposing\n    o[\"ctrlKey\"] = ctrlKey\n    o[\"shiftKey\"] = shiftKey\n    o[\"altKey\"] =
altKey\n    o[\"metaKey\"] = metaKey\n    o[\"modifierAltGraph\"] = modifierAltGraph\n
o[\"modifierCapsLock\"] = modifierCapsLock\n    o[\"modifierFn\"] = modifierFn\n    o[\"modifierFnLock\"] =
modifierFnLock\n    o[\"modifierHyper\"] = modifierHyper\n    o[\"modifierNumLock\"] = modifierNumLock\n
o[\"modifierScrollLock\"] = modifierScrollLock\n    o[\"modifierSuper\"] = modifierSuper\n
o[\"modifierSymbol\"] = modifierSymbol\n    o[\"modifierSymbolLock\"] = modifierSymbolLock\n    o[\"view\"] =
view\n    o[\"detail\"] = detail\n    o[\"bubbles\"] = bubbles\n    o[\"cancelable\"] = cancelable\n    o[\"composed\"] =
composed\n    return o\n} \n\n/**\n * Exposes the JavaScript
[CompositionEvent](https://developer.mozilla.org/en/docs/Web/API/CompositionEvent) to Kotlin\n */\npublic
external open class CompositionEvent(type: String, eventInitDict: CompositionEventInit = definedExternally) :
UIEvent {\n    open val data: String\n\n    companion object {\n        val NONE: Short\n        val
CAPTURING_PHASE: Short\n        val AT_TARGET: Short\n        val BUBBLING_PHASE: Short\n    } \n\npublic
external interface CompositionEventInit : UIEventInit {\n    var data: String? /* = \"\" */\n    get() =
definedExternally\n    set(value) = definedExternally\n} \n\n@kotlin.internal.InlineOnly\npublic inline fun
CompositionEventInit(data: String? = \"\", view: Window? = null, detail: Int? = 0, bubbles: Boolean? = false,
cancelable: Boolean? = false, composed: Boolean? = false): CompositionEventInit {\n    val o = js(\"({})\")\n

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o["data"] = data\n  o["view"] = view\n  o["detail"] = detail\n  o["bubbles"] = bubbles\n  o["cancelable"]
= cancelable\n  o["composed"] = composed\n  return o\n}\n\n**\n * Exposes the JavaScript
[Event](https://developer.mozilla.org/en/docs/Web/API/Event) to Kotlin\n *\npublic external open class
Event(type: String, eventInitDict: EventInit = definedExternally) {\n  open val type: String\n  open val target:
EventTarget?\n  open val currentTarget: EventTarget?\n  open val eventPhase: Short\n  open val bubbles:
Boolean\n  open val cancelable: Boolean\n  open val defaultPrevented: Boolean\n  open val composed:
Boolean\n  open val isTrusted: Boolean\n  open val timeStamp: Number\n  fun composedPath():
Array<EventTarget>\n  fun stopPropagation()\n  fun stopImmediatePropagation()\n  fun preventDefault()\n
fun initEvent(type: String, bubbles: Boolean, cancelable: Boolean)\n\n  companion object {\n    val NONE:
Short\n    val CAPTURING_PHASE: Short\n    val AT_TARGET: Short\n    val BUBBLING_PHASE:
Short\n  }\n}\n\n**\n * Exposes the JavaScript
[EventTarget](https://developer.mozilla.org/en/docs/Web/API/EventTarget) to Kotlin\n *\npublic external abstract
class EventTarget {\n  fun addEventListener(type: String, callback: EventListener?, options: dynamic =
definedExternally)\n  fun addEventListener(type: String, callback: ((Event) -> Unit)?, options: dynamic =
definedExternally)\n  fun removeEventListener(type: String, callback: EventListener?, options: dynamic =
definedExternally)\n  fun removeEventListener(type: String, callback: ((Event) -> Unit)?, options: dynamic =
definedExternally)\n  fun dispatchEvent(event: Event): Boolean\n}\n\n**\n * Exposes the JavaScript
[EventListener](https://developer.mozilla.org/en/docs/Web/API/EventListener) to Kotlin\n *\npublic external
interface EventListener {\n  fun handleEvent(event: Event)\n}\n\n**\n * Copyright 2010-2019 JetBrains s.r.o. and
Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that
can be found in the license/LICENSE.txt file.\n *\n\n// NOTE: THIS FILE IS AUTO-GENERATED, DO NOT
EDIT!\n\n// See github.com/kotlin/dukat for details\n\npackage org.w3c.dom\n\nimport kotlin.js.*\nimport
org.khronos.webgl.*\nimport org.w3c.css.masking.*\nimport org.w3c.dom.clipboard.*\nimport
org.w3c.dom.css.*\nimport org.w3c.dom.events.*\nimport org.w3c.dom.mediacapture.*\nimport
org.w3c.dom.parsing.*\nimport org.w3c.dom.pointerevents.*\nimport org.w3c.dom.svg.*\nimport
org.w3c.dom.url.*\nimport org.w3c.fetch.*\nimport org.w3c.files.*\nimport org.w3c.notifications.*\nimport
org.w3c.performance.*\nimport org.w3c.workers.*\nimport org.w3c.xhr.*\n\npublic external abstract class
HTMLAllCollection {\n  open val length: Int\n  fun item(nameOrIndex: String = definedExternally):
UnionElementOrHTMLCollection?\n  fun namedItem(name: String):
UnionElementOrHTMLCollection?\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun
HTMLAllCollection.get(index: Int): Element? = asDynamic()[index]\n\n@kotlin.internal.InlineOnly\npublic inline
operator fun HTMLAllCollection.get(name: String): UnionElementOrHTMLCollection? =
asDynamic()[name]\n\n**\n * Exposes the JavaScript
[HTMLFormControlsCollection](https://developer.mozilla.org/en/docs/Web/API/HTMLFormControlsCollection)
to Kotlin\n *\npublic external abstract class HTMLFormControlsCollection : HTMLCollection\n\n**\n * Exposes
the JavaScript [RadioNodeList](https://developer.mozilla.org/en/docs/Web/API/RadioNodeList) to Kotlin\n
*\npublic external abstract class RadioNodeList : NodeList, UnionElementOrRadioNodeList {\n  open var value:
String\n}\n\n**\n * Exposes the JavaScript
[HTMLOptionsCollection](https://developer.mozilla.org/en/docs/Web/API/HTMLOptionsCollection) to Kotlin\n
*\npublic external abstract class HTMLOptionsCollection : HTMLCollection {\n  override var length: Int\n  open
var selectedIndex: Int\n  fun add(element: UnionHTMLOptGroupElementOrHTMLOptionElement, before:
dynamic = definedExternally)\n  fun remove(index: Int)\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator
fun HTMLOptionsCollection.set(index: Int, option: HTMLOptionElement?) { asDynamic()[index] = option
}\n\n**\n * Exposes the JavaScript
[HTMLInputElement](https://developer.mozilla.org/en/docs/Web/API/HTMLInputElement) to Kotlin\n *\npublic external
abstract class HTMLInputElement : Element, GlobalEventHandlers, DocumentAndElementEventHandlers,
ElementContentEditable, ElementCSSInlineStyle {\n  open var title: String\n  open var lang: String\n  open var
translate: Boolean\n  open var dir: String\n  open val dataset: DOMStringMap\n  open var hidden: Boolean\n

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open var tabIndex: Int\n open var accessKey: String\n open val accessKeyLabel: String\n open var draggable:
Boolean\n open val dropzone: DOMTokenList\n open var contextMenu: HTMLMenuElement?\n open var
spellcheck: Boolean\n open var innerText: String\n open val offsetParent: Element?\n open val offsetTop: Int\n
open val offsetLeft: Int\n open val offsetWidth: Int\n open val offsetHeight: Int\n fun click()\n fun focus()\n
fun blur()\n fun forceSpellCheck()\n\n companion object {\n val ELEMENT_NODE: Short\n val
ATTRIBUTE_NODE: Short\n val TEXT_NODE: Short\n val CDATA_SECTION_NODE: Short\n val
ENTITY_REFERENCE_NODE: Short\n val ENTITY_NODE: Short\n val
PROCESSING_INSTRUCTION_NODE: Short\n val COMMENT_NODE: Short\n val
DOCUMENT_NODE: Short\n val DOCUMENT_TYPE_NODE: Short\n val
DOCUMENT_FRAGMENT_NODE: Short\n val NOTATION_NODE: Short\n val
DOCUMENT_POSITION_DISCONNECTED: Short\n val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }\n}\n\n/**\n * Exposes the JavaScript
[HTMLUnknownElement](https://developer.mozilla.org/en/docs/Web/API/HTMLUnknownElement) to Kotlin\n
*\n\npublic external abstract class HTMLUnknownElement : HTMLElement {\n companion object {\n val
ELEMENT_NODE: Short\n val ATTRIBUTE_NODE: Short\n val TEXT_NODE: Short\n val
CDATA_SECTION_NODE: Short\n val ENTITY_REFERENCE_NODE: Short\n val ENTITY_NODE:
Short\n val PROCESSING_INSTRUCTION_NODE: Short\n val COMMENT_NODE: Short\n val
DOCUMENT_NODE: Short\n val DOCUMENT_TYPE_NODE: Short\n val
DOCUMENT_FRAGMENT_NODE: Short\n val NOTATION_NODE: Short\n val
DOCUMENT_POSITION_DISCONNECTED: Short\n val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }\n}\n\n/**\n * Exposes the JavaScript
[DOMStringMap](https://developer.mozilla.org/en/docs/Web/API/DOMStringMap) to Kotlin\n
*\n\npublic external abstract class DOMStringMap\n\n@kotlin.internal.InlineOnly\n\npublic inline operator fun
DOMStringMap.get(name: String): String? = asDynamic()[name]\n\n@kotlin.internal.InlineOnly\n\npublic inline
operator fun DOMStringMap.set(name: String, value: String) { asDynamic()[name] = value }\n\n}\n\n/**\n * Exposes
the JavaScript [HTMLHtmlElement](https://developer.mozilla.org/en/docs/Web/API/HTMLHtmlElement) to
Kotlin\n
*\n\npublic external abstract class HTMLHtmlElement : HTMLElement {\n open var version: String\n\n
companion object {\n val ELEMENT_NODE: Short\n val ATTRIBUTE_NODE: Short\n val
TEXT_NODE: Short\n val CDATA_SECTION_NODE: Short\n val ENTITY_REFERENCE_NODE:
Short\n val ENTITY_NODE: Short\n val PROCESSING_INSTRUCTION_NODE: Short\n val
COMMENT_NODE: Short\n val DOCUMENT_NODE: Short\n val DOCUMENT_TYPE_NODE: Short\n
val DOCUMENT_FRAGMENT_NODE: Short\n val NOTATION_NODE: Short\n val
DOCUMENT_POSITION_DISCONNECTED: Short\n val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }\n}\n\n/**\n * Exposes the JavaScript
[HTMLHeadElement](https://developer.mozilla.org/en/docs/Web/API/HTMLHeadElement) to Kotlin\n
*\n\npublic external abstract class HTMLHeadElement : HTMLElement {\n companion object {\n val
ELEMENT_NODE: Short\n val ATTRIBUTE_NODE: Short\n val TEXT_NODE: Short\n val
CDATA_SECTION_NODE: Short\n val ENTITY_REFERENCE_NODE: Short\n val ENTITY_NODE:
Short\n val PROCESSING_INSTRUCTION_NODE: Short\n val COMMENT_NODE: Short\n val
DOCUMENT_NODE: Short\n val DOCUMENT_TYPE_NODE: Short\n val
DOCUMENT_FRAGMENT_NODE: Short\n val NOTATION_NODE: Short\n val
DOCUMENT_POSITION_DISCONNECTED: Short\n val DOCUMENT_POSITION_PRECEDING: Short\n

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    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLTitleElement](https://developer.mozilla.org/en/docs/Web/API/HTMLTitleElement) to Kotlin\n *\npublic
external abstract class HTMLTitleElement : HTMLElement {\n    open var text: String\n\n    companion object {\n
    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val
CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE:
Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLBaseElement](https://developer.mozilla.org/en/docs/Web/API/HTMLBaseElement) to Kotlin\n *\npublic
external abstract class HTMLBaseElement : HTMLElement {\n    open var href: String\n    open var target:
String\n\n    companion object {\n    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n
    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE:
Short\n    val ENTITY_NODE: Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val
COMMENT_NODE: Short\n    val DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n
    val DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLLinkElement](https://developer.mozilla.org/en/docs/Web/API/HTMLLinkElement) to Kotlin\n *\npublic
external abstract class HTMLLinkElement : HTMLElement, LinkStyle {\n    open var href: String\n    open var
crossOrigin: String?\n    open var rel: String\n    open var `as`: RequestDestination\n    open val relList:
DOMTokenList\n    open var media: String\n    open var nonce: String\n    open var hreflang: String\n    open var
type: String\n    open val sizes: DOMTokenList\n    open varreferrerPolicy: String\n    open var charset: String\n
    open var rev: String\n    open var target: String\n    open var scope: String\n    open var workerType:
WorkerType\n\n    companion object {\n    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE:
Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val
ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val
PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLMetaElement](https://developer.mozilla.org/en/docs/Web/API/HTMLMetaElement) to Kotlin\n *\npublic
external abstract class HTMLMetaElement : HTMLElement {\n    open var name: String\n    open var httpEquiv:
String\n    open var content: String\n    open var scheme: String\n\n    companion object {\n    val
ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val
CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE:
Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val

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DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }n}}\n\n/**\n * Exposes the JavaScript
[HTMLStyleElement](https://developer.mozilla.org/en/docs/Web/API/HTMLStyleElement) to Kotlin\n *^npublic
external abstract class HTMLStyleElement : HTMLElement, LinkStyle {\n    open var media: String\n    open var
nonce: String\n    open var type: String\n\n    companion object {\n        val ELEMENT_NODE: Short\n        val
ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val
ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE: Short\n        val
PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }n}}\n\n/**\n * Exposes the JavaScript
[HTMLBodyElement](https://developer.mozilla.org/en/docs/Web/API/HTMLBodyElement) to Kotlin\n *^npublic
external abstract class HTMLBodyElement : HTMLElement, WindowEventHandlers {\n    open var text: String\n
open var link: String\n    open var vLink: String\n    open var aLink: String\n    open var bgColor: String\n
open var background: String\n\n    companion object {\n        val ELEMENT_NODE: Short\n        val
ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val
ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE: Short\n        val
PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }n}}\n\n/**\n * Exposes the JavaScript
[HTMLHeadingElement](https://developer.mozilla.org/en/docs/Web/API/HTMLHeadingElement) to Kotlin\n
*^npublic external abstract class HTMLHeadingElement : HTMLElement {\n    open var align: String\n\n
companion object {\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val
TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE:
Short\n        val ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val
COMMENT_NODE: Short\n        val DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n
        val DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }n}}\n\n/**\n * Exposes the JavaScript
[HTMLParagraphElement](https://developer.mozilla.org/en/docs/Web/API/HTMLParagraphElement) to Kotlin\n
*^npublic external abstract class HTMLParagraphElement : HTMLElement {\n    open var align: String\n\n
companion object {\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val
TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE:
Short\n        val ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val
COMMENT_NODE: Short\n        val DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n
        val DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val

```

DOCUMENT\_POSITION\_DISCONNECTED: Short\n val DOCUMENT\_POSITION\_PRECEDING: Short\n val DOCUMENT\_POSITION\_FOLLOWING: Short\n val DOCUMENT\_POSITION\_CONTAINS: Short\n val DOCUMENT\_POSITION\_CONTAINED\_BY: Short\n val

DOCUMENT\_POSITION\_IMPLEMENTATION\_SPECIFIC: Short\n }n}\n\n/\*\*\n \* Exposes the JavaScript [HTMLHRElement](https://developer.mozilla.org/en/docs/Web/API/HTMLHRElement) to Kotlin\n \*\n\npublic external abstract class HTMLHRElement : HTMLElement {\n open var align: String\n open var color: String\n open var noShade: Boolean\n open var size: String\n open var width: String\n\n companion object {\n val ELEMENT\_NODE: Short\n val ATTRIBUTE\_NODE: Short\n val TEXT\_NODE: Short\n val CDATA\_SECTION\_NODE: Short\n val ENTITY\_REFERENCE\_NODE: Short\n val ENTITY\_NODE: Short\n val PROCESSING\_INSTRUCTION\_NODE: Short\n val COMMENT\_NODE: Short\n val DOCUMENT\_NODE: Short\n val DOCUMENT\_TYPE\_NODE: Short\n val DOCUMENT\_FRAGMENT\_NODE: Short\n val NOTATION\_NODE: Short\n val

DOCUMENT\_POSITION\_DISCONNECTED: Short\n val DOCUMENT\_POSITION\_PRECEDING: Short\n val DOCUMENT\_POSITION\_FOLLOWING: Short\n val DOCUMENT\_POSITION\_CONTAINS: Short\n val DOCUMENT\_POSITION\_CONTAINED\_BY: Short\n val

DOCUMENT\_POSITION\_IMPLEMENTATION\_SPECIFIC: Short\n }n}\n\n/\*\*\n \* Exposes the JavaScript [HTMLPreElement](https://developer.mozilla.org/en/docs/Web/API/HTMLPreElement) to Kotlin\n \*\n\npublic external abstract class HTMLPreElement : HTMLElement {\n open var width: Int\n\n companion object {\n val ELEMENT\_NODE: Short\n val ATTRIBUTE\_NODE: Short\n val TEXT\_NODE: Short\n val CDATA\_SECTION\_NODE: Short\n val ENTITY\_REFERENCE\_NODE: Short\n val ENTITY\_NODE: Short\n val PROCESSING\_INSTRUCTION\_NODE: Short\n val COMMENT\_NODE: Short\n val DOCUMENT\_NODE: Short\n val DOCUMENT\_TYPE\_NODE: Short\n val DOCUMENT\_FRAGMENT\_NODE: Short\n val NOTATION\_NODE: Short\n val

DOCUMENT\_POSITION\_DISCONNECTED: Short\n val DOCUMENT\_POSITION\_PRECEDING: Short\n val DOCUMENT\_POSITION\_FOLLOWING: Short\n val DOCUMENT\_POSITION\_CONTAINS: Short\n val DOCUMENT\_POSITION\_CONTAINED\_BY: Short\n val

DOCUMENT\_POSITION\_IMPLEMENTATION\_SPECIFIC: Short\n }n}\n\n/\*\*\n \* Exposes the JavaScript [HTMLQuoteElement](https://developer.mozilla.org/en/docs/Web/API/HTMLQuoteElement) to Kotlin\n \*\n\npublic external abstract class HTMLQuoteElement : HTMLElement {\n open var cite: String\n\n companion object {\n val ELEMENT\_NODE: Short\n val ATTRIBUTE\_NODE: Short\n val TEXT\_NODE: Short\n val CDATA\_SECTION\_NODE: Short\n val ENTITY\_REFERENCE\_NODE: Short\n val ENTITY\_NODE: Short\n val PROCESSING\_INSTRUCTION\_NODE: Short\n val COMMENT\_NODE: Short\n val DOCUMENT\_NODE: Short\n val DOCUMENT\_TYPE\_NODE: Short\n val DOCUMENT\_FRAGMENT\_NODE: Short\n val NOTATION\_NODE: Short\n val

DOCUMENT\_POSITION\_DISCONNECTED: Short\n val DOCUMENT\_POSITION\_PRECEDING: Short\n val DOCUMENT\_POSITION\_FOLLOWING: Short\n val DOCUMENT\_POSITION\_CONTAINS: Short\n val DOCUMENT\_POSITION\_CONTAINED\_BY: Short\n val

DOCUMENT\_POSITION\_IMPLEMENTATION\_SPECIFIC: Short\n }n}\n\n/\*\*\n \* Exposes the JavaScript [HTMLLOListElement](https://developer.mozilla.org/en/docs/Web/API/HTMLLOListElement) to Kotlin\n \*\n\npublic external abstract class HTMLLOListElement : HTMLElement {\n open var reversed: Boolean\n open var start: Int\n open var type: String\n open var compact: Boolean\n\n companion object {\n val ELEMENT\_NODE: Short\n val ATTRIBUTE\_NODE: Short\n val TEXT\_NODE: Short\n val CDATA\_SECTION\_NODE: Short\n val ENTITY\_REFERENCE\_NODE: Short\n val ENTITY\_NODE: Short\n val PROCESSING\_INSTRUCTION\_NODE: Short\n val COMMENT\_NODE: Short\n val DOCUMENT\_NODE: Short\n val DOCUMENT\_TYPE\_NODE: Short\n val DOCUMENT\_FRAGMENT\_NODE: Short\n val NOTATION\_NODE: Short\n val

DOCUMENT\_POSITION\_DISCONNECTED: Short\n val DOCUMENT\_POSITION\_PRECEDING: Short\n val DOCUMENT\_POSITION\_FOLLOWING: Short\n val DOCUMENT\_POSITION\_CONTAINS: Short\n

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    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLUListElement](https://developer.mozilla.org/en/docs/Web/API/HTMLUListElement) to Kotlin\n */\npublic
external abstract class HTMLUListElement : HTMLInputElement {\n    open var compact: Boolean\n    open var type:
String\n\n    companion object {\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n
val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE:
Short\n        val ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val
COMMENT_NODE: Short\n        val DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n
        val DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLLIElement](https://developer.mozilla.org/en/docs/Web/API/HTMLLIElement) to Kotlin\n */\npublic
external abstract class HTMLLIElement : HTMLInputElement {\n    open var value: Int\n    open var type: String\n\n
companion object {\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val
TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE:
Short\n        val ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val
COMMENT_NODE: Short\n        val DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n
        val DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLDListElement](https://developer.mozilla.org/en/docs/Web/API/HTMLDListElement) to Kotlin\n */\npublic
external abstract class HTMLDListElement : HTMLInputElement {\n    open var compact: Boolean\n\n    companion
object {\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val TEXT_NODE:
Short\n        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE: Short\n        val
ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE:
Short\n        val DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLDivElement](https://developer.mozilla.org/en/docs/Web/API/HTMLDivElement) to Kotlin\n */\npublic
external abstract class HTMLDivElement : HTMLInputElement {\n    open var align: String\n\n    companion object {\n
        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val
CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE:
Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLAnchorElement](https://developer.mozilla.org/en/docs/Web/API/HTMLAnchorElement) to Kotlin\n
*/\npublic external abstract class HTMLAnchorElement : HTMLInputElement, HTMLHyperlinkElementUtils {\n    open

```

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var target: String\n  open var download: String\n  open var ping: String\n  open var rel: String\n  open val
reList: DOMTokenList\n  open var hreflang: String\n  open var type: String\n  open var text: String\n  open
var referrerPolicy: String\n  open var coords: String\n  open var charset: String\n  open var name: String\n
open var rev: String\n  open var shape: String\n\n  companion object {\n    val ELEMENT_NODE: Short\n
val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n
val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val
PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n  }\n}\n\n/**\n * Exposes the JavaScript
[HTMLDataElement](https://developer.mozilla.org/en/docs/Web/API/HTMLDataElement) to Kotlin\n */\npublic
external abstract class HTMLDataElement : HTMLElement {\n  open var value: String\n\n  companion object {\n
    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val
CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE:
Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n  }\n}\n\n/**\n * Exposes the JavaScript
[HTMLTimeElement](https://developer.mozilla.org/en/docs/Web/API/HTMLTimeElement) to Kotlin\n */\npublic
external abstract class HTMLTimeElement : HTMLElement {\n  open var dateTime: String\n\n  companion
object {\n    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE:
Short\n    val CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val
ENTITY_NODE: Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE:
Short\n    val DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n  }\n}\n\n/**\n * Exposes the JavaScript
[HTMLSpanElement](https://developer.mozilla.org/en/docs/Web/API/HTMLSpanElement) to Kotlin\n */\npublic
external abstract class HTMLSpanElement : HTMLElement {\n  companion object {\n    val
ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val
CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE:
Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n  }\n}\n\n/**\n * Exposes the JavaScript
[HTMLBRElement](https://developer.mozilla.org/en/docs/Web/API/HTMLBRElement) to Kotlin\n */\npublic
external abstract class HTMLBRElement : HTMLElement {\n  open var clear: String\n\n  companion object {\n

```

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    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val
CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE:
Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    } \n} \n \n /** \n * Exposes the JavaScript
[HTMLHyperlinkElementUtils](https://developer.mozilla.org/en/docs/Web/API/HTMLHyperlinkElementUtils) to
Kotlin \n * \n public external interface HTMLHyperlinkElementUtils { \n    var href: String\n    val origin: String\n
var protocol: String\n    var username: String\n    var password: String\n    var host: String\n    var hostname:
String\n    var port: String\n    var pathname: String\n    var search: String\n    var hash: String \n} \n \n /** \n * Exposes
the JavaScript [HTMLModElement](https://developer.mozilla.org/en/docs/Web/API/HTMLModElement) to
Kotlin \n * \n public external abstract class HTMLModElement : HTMLElement { \n    open var cite: String\n    open
var dateTime: String \n \n    companion object { \n        val ELEMENT_NODE: Short\n        val
ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val
ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE: Short\n        val
PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    } \n} \n \n /** \n * Exposes the JavaScript
[HTMLPictureElement](https://developer.mozilla.org/en/docs/Web/API/HTMLPictureElement) to Kotlin \n
* \n public external abstract class HTMLPictureElement : HTMLElement { \n    companion object { \n        val
ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val
CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE:
Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    } \n} \n \n /** \n * Exposes the JavaScript
[HTMLSourceElement](https://developer.mozilla.org/en/docs/Web/API/HTMLSourceElement) to Kotlin \n
* \n public external abstract class HTMLSourceElement : HTMLElement { \n    open var src: String\n    open var
type: String\n    open var srcset: String\n    open var sizes: String\n    open var media: String \n \n    companion object
{ \n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n
        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE: Short\n        val
ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE:
Short\n        val DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    } \n} \n \n /** \n * Exposes the JavaScript

```

[HTMLImageElement](https://developer.mozilla.org/en/docs/Web/API/HTMLImageElement) to Kotlin

```

*public external abstract class HTMLImageElement : HTMLElement, HTMLOrSVGImageElement,
    TexImageSource {
    open var alt: String
    open var src: String
    open var srcset: String
    open var sizes: String
    open var crossOrigin: String?
    open var useMap: String
    open var isMap: Boolean
    open var width: Int
    open var height: Int
    open val naturalWidth: Int
    open val naturalHeight: Int
    open val complete: Boolean
    open val currentSrc: String
    open var referrerPolicy: String
    open var name: String
    open var lowsrc: String
    open var align: String
    open var hspace: Int
    open var vspace: Int
    open var longDesc: String
    open var border: String
    open val x: Int
    open val y: Int

    companion object {
        val ELEMENT_NODE: Short
        val ATTRIBUTE_NODE: Short
        val TEXT_NODE: Short
        val CDATA_SECTION_NODE: Short
        val ENTITY_REFERENCE_NODE: Short
        val ENTITY_NODE: Short
        val PROCESSING_INSTRUCTION_NODE: Short
        val COMMENT_NODE: Short
        val DOCUMENT_NODE: Short
        val DOCUMENT_TYPE_NODE: Short
        val DOCUMENT_FRAGMENT_NODE: Short
        val NOTATION_NODE: Short

        val DOCUMENT_POSITION_DISCONNECTED: Short
        val DOCUMENT_POSITION_PRECEDING: Short
        val DOCUMENT_POSITION_FOLLOWING: Short
        val DOCUMENT_POSITION_CONTAINS: Short
        val DOCUMENT_POSITION_CONTAINED_BY: Short

        val DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short
    }
}

```

\* Exposes the JavaScript [HTMLIFrameElement](https://developer.mozilla.org/en/docs/Web/API/HTMLIFrameElement) to Kotlin

```

*public external abstract class HTMLIFrameElement : HTMLElement {
    open var src: String
    open var srcdoc: String
    open var name: String
    open val sandbox: DOMTokenList
    open var allowFullscreen: Boolean
    open var allowUserMedia: Boolean
    open var width: String
    open var height: String
    open var referrerPolicy: String
    open val contentDocument: Document?
    open val contentWindow: Window?
    open var align: String
    open var scrolling: String
    open var frameborder: String
    open var longDesc: String
    open var marginHeight: String
    open var marginWidth: String
    fun getSVGDocument(): Document?

    companion object {
        val ELEMENT_NODE: Short
        val ATTRIBUTE_NODE: Short
        val TEXT_NODE: Short
        val CDATA_SECTION_NODE: Short
        val ENTITY_REFERENCE_NODE: Short
        val ENTITY_NODE: Short
        val PROCESSING_INSTRUCTION_NODE: Short
        val COMMENT_NODE: Short
        val DOCUMENT_NODE: Short
        val DOCUMENT_TYPE_NODE: Short
        val DOCUMENT_FRAGMENT_NODE: Short
        val NOTATION_NODE: Short

        val DOCUMENT_POSITION_DISCONNECTED: Short
        val DOCUMENT_POSITION_PRECEDING: Short
        val DOCUMENT_POSITION_FOLLOWING: Short
        val DOCUMENT_POSITION_CONTAINS: Short
        val DOCUMENT_POSITION_CONTAINED_BY: Short

        val DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short
    }
}

```

\* Exposes the JavaScript [HTMLEmbedElement](https://developer.mozilla.org/en/docs/Web/API/HTMLEmbedElement) to Kotlin

```

*public external abstract class HTMLEmbedElement : HTMLElement {
    open var src: String
    open var type: String
    open var width: String
    open var height: String
    open var align: String
    open var name: String
    fun getSVGDocument(): Document?

    companion object {
        val ELEMENT_NODE: Short
        val ATTRIBUTE_NODE: Short
        val TEXT_NODE: Short
        val CDATA_SECTION_NODE: Short
        val ENTITY_REFERENCE_NODE: Short
        val ENTITY_NODE: Short
        val PROCESSING_INSTRUCTION_NODE: Short
        val COMMENT_NODE: Short
        val DOCUMENT_NODE: Short
        val DOCUMENT_TYPE_NODE: Short
        val DOCUMENT_FRAGMENT_NODE: Short
        val NOTATION_NODE: Short

        val DOCUMENT_POSITION_DISCONNECTED: Short
        val DOCUMENT_POSITION_PRECEDING: Short
        val DOCUMENT_POSITION_FOLLOWING: Short
        val DOCUMENT_POSITION_CONTAINS: Short
        val DOCUMENT_POSITION_CONTAINED_BY: Short

        val DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short
    }
}

```

\* Exposes the JavaScript [HTMLObjectElement](https://developer.mozilla.org/en/docs/Web/API/HTMLObjectElement) to Kotlin

```

*public external abstract class HTMLObjectElement : HTMLElement {
    open var data: String

```

```

type: String\n open var typeMustMatch: Boolean\n open var name: String\n open var useMap: String\n open
val form: HTMLFormElement?\n open var width: String\n open var height: String\n open val
contentDocument: Document?\n open val contentWindow: Window?\n open val willValidate: Boolean\n open
val validity: ValidityState\n open val validationMessage: String\n open var align: String\n open var archive:
String\n open var code: String\n open var declare: Boolean\n open var hspace: Int\n open var standby:
String\n open var vspace: Int\n open var codeBase: String\n open var codeType: String\n open var border:
String\n fun getSVGDocument(): Document?\n fun checkValidity(): Boolean\n fun reportValidity():
Boolean\n fun setCustomValidity(error: String)\n\n companion object {\n val ELEMENT_NODE: Short\n
val ATTRIBUTE_NODE: Short\n val TEXT_NODE: Short\n val CDATA_SECTION_NODE: Short\n
val ENTITY_REFERENCE_NODE: Short\n val ENTITY_NODE: Short\n val
PROCESSING_INSTRUCTION_NODE: Short\n val COMMENT_NODE: Short\n val
DOCUMENT_NODE: Short\n val DOCUMENT_TYPE_NODE: Short\n val
DOCUMENT_FRAGMENT_NODE: Short\n val NOTATION_NODE: Short\n val
DOCUMENT_POSITION_DISCONNECTED: Short\n val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }\n}\n\n/**\n * Exposes the JavaScript
[HTMLParamElement](https://developer.mozilla.org/en/docs/Web/API/HTMLParamElement) to Kotlin\n
*\npublic external abstract class HTMLParamElement : HTMLElement {\n open var name: String\n open var
value: String\n open var type: String\n open var valueType: String\n\n companion object {\n val
ELEMENT_NODE: Short\n val ATTRIBUTE_NODE: Short\n val TEXT_NODE: Short\n val
CDATA_SECTION_NODE: Short\n val ENTITY_REFERENCE_NODE: Short\n val ENTITY_NODE:
Short\n val PROCESSING_INSTRUCTION_NODE: Short\n val COMMENT_NODE: Short\n val
DOCUMENT_NODE: Short\n val DOCUMENT_TYPE_NODE: Short\n val
DOCUMENT_FRAGMENT_NODE: Short\n val NOTATION_NODE: Short\n val
DOCUMENT_POSITION_DISCONNECTED: Short\n val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }\n}\n\n/**\n * Exposes the JavaScript
[HTMLVideoElement](https://developer.mozilla.org/en/docs/Web/API/HTMLVideoElement) to Kotlin\n
*\npublic external abstract class HTMLVideoElement : HTMLMediaElement, CanvasImageSource, TexImageSource {\n
open var width: Int\n open var height: Int\n open val videoWidth: Int\n open val videoHeight: Int\n open var
poster: String\n open var playsInline: Boolean\n\n companion object {\n val NETWORK_EMPTY: Short\n
val NETWORK_IDLE: Short\n val NETWORK_LOADING: Short\n val NETWORK_NO_SOURCE:
Short\n val HAVE_NOTHING: Short\n val HAVE_METADATA: Short\n val
HAVE_CURRENT_DATA: Short\n val HAVE_FUTURE_DATA: Short\n val HAVE_ENOUGH_DATA:
Short\n val ELEMENT_NODE: Short\n val ATTRIBUTE_NODE: Short\n val TEXT_NODE: Short\n
val CDATA_SECTION_NODE: Short\n val ENTITY_REFERENCE_NODE: Short\n val
ENTITY_NODE: Short\n val PROCESSING_INSTRUCTION_NODE: Short\n val COMMENT_NODE:
Short\n val DOCUMENT_NODE: Short\n val DOCUMENT_TYPE_NODE: Short\n val
DOCUMENT_FRAGMENT_NODE: Short\n val NOTATION_NODE: Short\n val
DOCUMENT_POSITION_DISCONNECTED: Short\n val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }\n}\n\n/**\n * Exposes the JavaScript
[HTMLAudioElement](https://developer.mozilla.org/en/docs/Web/API/HTMLAudioElement) to Kotlin\n
*\npublic external abstract class HTMLAudioElement : HTMLMediaElement {\n companion object {\n val
NETWORK_EMPTY: Short\n val NETWORK_IDLE: Short\n val NETWORK_LOADING: Short\n

```

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val NETWORK_NO_SOURCE: Short\n    val HAVE_NOTHING: Short\n    val HAVE_METADATA:
Short\n    val HAVE_CURRENT_DATA: Short\n    val HAVE_FUTURE_DATA: Short\n    val
HAVE_ENOUGH_DATA: Short\n    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n
val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE:
Short\n    val ENTITY_NODE: Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val
COMMENT_NODE: Short\n    val DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n
    val DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLTrackElement](https://developer.mozilla.org/en/docs/Web/API/HTMLTrackElement) to Kotlin\n */\npublic
external abstract class HTMLTrackElement : HTMLInputElement {\n    open var kind: String\n    open var src: String\n
open var srclang: String\n    open var label: String\n    open var default: Boolean\n    open val readyState: Short\n
open val track: TextTrack\n\n    companion object {\n        val NONE: Short\n        val LOADING: Short\n        val
LOADED: Short\n        val ERROR: Short\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE:
Short\n        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val
ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE: Short\n        val
PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLMediaElement](https://developer.mozilla.org/en/docs/Web/API/HTMLMediaElement) to Kotlin\n */\npublic
external abstract class HTMLMediaElement : HTMLInputElement {\n    open val error: MediaError?\n    open
var src: String\n    open var srcObject: dynamic\n    open val currentSrc: String\n    open var crossOrigin: String?\n
open val networkState: Short\n    open var preload: String\n    open val buffered: TimeRanges\n    open val
readyState: Short\n    open val seeking: Boolean\n    open var currentTime: Double\n    open val duration: Double\n
open val paused: Boolean\n    open var defaultPlaybackRate: Double\n    open var playbackRate: Double\n    open
val played: TimeRanges\n    open val seekable: TimeRanges\n    open val ended: Boolean\n    open var autoplay:
Boolean\n    open var loop: Boolean\n    open var controls: Boolean\n    open var volume: Double\n    open var
muted: Boolean\n    open var defaultMuted: Boolean\n    open val audioTracks: AudioTrackList\n    open val
videoTracks: VideoTrackList\n    open val textTracks: TextTrackList\n    fun load()\n    fun canPlayType(type:
String): CanPlayTypeResult\n    fun fastSeek(time: Double)\n    fun getStartDate(): dynamic\n    fun play():
Promise<Unit>\n    fun pause()\n    fun addTextTrack(kind: TextTrackKind, label: String = definedExternally,
language: String = definedExternally): TextTrack\n\n    companion object {\n        val NETWORK_EMPTY:
Short\n        val NETWORK_IDLE: Short\n        val NETWORK_LOADING: Short\n        val
NETWORK_NO_SOURCE: Short\n        val HAVE_NOTHING: Short\n        val HAVE_METADATA: Short\n
        val HAVE_CURRENT_DATA: Short\n        val HAVE_FUTURE_DATA: Short\n        val
HAVE_ENOUGH_DATA: Short\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n
        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE:
Short\n        val ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val
COMMENT_NODE: Short\n        val DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n
        val DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n

```



```

val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[MediaError](https://developer.mozilla.org/en/docs/Web/API/MediaError) to Kotlin\n *\npublic external abstract
class MediaError {\n    open val code: Short\n\n    companion object {\n        val MEDIA_ERR_ABORTED: Short\n
        val MEDIA_ERR_NETWORK: Short\n        val MEDIA_ERR_DECODE: Short\n        val
MEDIA_ERR_SRC_NOT_SUPPORTED: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[AudioTrackList](https://developer.mozilla.org/en/docs/Web/API/AudioTrackList) to Kotlin\n *\npublic external
abstract class AudioTrackList : EventTarget {\n    open val length: Int\n    open var onchange: ((Event) ->
dynamic)?\n    open var onaddtrack: ((TrackEvent) -> dynamic)?\n    open var onremovetrack: ((TrackEvent) ->
dynamic)?\n    fun getTrackById(id: String): AudioTrack?\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator
fun AudioTrackList.get(index: Int): AudioTrack? = asDynamic()[index]\n\n/**\n * Exposes the JavaScript
[AudioTrack](https://developer.mozilla.org/en/docs/Web/API/AudioTrack) to Kotlin\n *\npublic external abstract
class AudioTrack : UnionAudioTrackOrTextTrackOrVideoTrack {\n    open val id: String\n    open val kind:
String\n    open val label: String\n    open val language: String\n    open var enabled: Boolean\n}\n\n/**\n * Exposes
the JavaScript [VideoTrackList](https://developer.mozilla.org/en/docs/Web/API/VideoTrackList) to Kotlin\n
*\npublic external abstract class VideoTrackList : EventTarget {\n    open val length: Int\n    open val
selectedIndex: Int\n    open var onchange: ((Event) -> dynamic)?\n    open var onaddtrack: ((TrackEvent) ->
dynamic)?\n    open var onremovetrack: ((TrackEvent) -> dynamic)?\n    fun getTrackById(id: String):
VideoTrack?\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun VideoTrackList.get(index: Int):
VideoTrack? = asDynamic()[index]\n\n/**\n * Exposes the JavaScript
[VideoTrack](https://developer.mozilla.org/en/docs/Web/API/VideoTrack) to Kotlin\n *\npublic external abstract
class VideoTrack : UnionAudioTrackOrTextTrackOrVideoTrack {\n    open val id: String\n    open val kind:
String\n    open val label: String\n    open val language: String\n    open var selected: Boolean\n}\n\npublic external
abstract class TextTrackList : EventTarget {\n    open val length: Int\n    open var onchange: ((Event) ->
dynamic)?\n    open var onaddtrack: ((TrackEvent) -> dynamic)?\n    open var onremovetrack: ((TrackEvent) ->
dynamic)?\n    fun getTrackById(id: String): TextTrack?\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator
fun TextTrackList.get(index: Int): TextTrack? = asDynamic()[index]\n\n/**\n * Exposes the JavaScript
[TextTrack](https://developer.mozilla.org/en/docs/Web/API/TextTrack) to Kotlin\n *\npublic external abstract
class TextTrack : EventTarget, UnionAudioTrackOrTextTrackOrVideoTrack {\n    open val kind: TextTrackKind\n
    open val label: String\n    open val language: String\n    open val id: String\n    open val
inBandMetadataTrackDispatchType: String\n    open var mode: TextTrackMode\n    open val cues:
TextTrackCueList?\n    open val activeCues: TextTrackCueList?\n    open var oncuechange: ((Event) ->
dynamic)?\n    fun addCue(cue: TextTrackCue)\n    fun removeCue(cue: TextTrackCue)\n}\n\npublic external
abstract class TextTrackCueList {\n    open val length: Int\n    fun getCueById(id: String):
TextTrackCue?\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun TextTrackCueList.get(index: Int):
TextTrackCue? = asDynamic()[index]\n\n/**\n * Exposes the JavaScript
[TextTrackCue](https://developer.mozilla.org/en/docs/Web/API/TextTrackCue) to Kotlin\n *\npublic external
abstract class TextTrackCue : EventTarget {\n    open val track: TextTrack?\n    open var id: String\n    open var
startTime: Double\n    open var endTime: Double\n    open var pauseOnExit: Boolean\n    open var onenter: ((Event)
-> dynamic)?\n    open var onexit: ((Event) -> dynamic)?\n}\n\n/**\n * Exposes the JavaScript
[TimeRanges](https://developer.mozilla.org/en/docs/Web/API/TimeRanges) to Kotlin\n *\npublic external abstract
class TimeRanges {\n    open val length: Int\n    fun start(index: Int): Double\n    fun end(index: Int):
Double\n}\n\n/**\n * Exposes the JavaScript
[TrackEvent](https://developer.mozilla.org/en/docs/Web/API/TrackEvent) to Kotlin\n *\npublic external open class
TrackEvent(type: String, eventInitDict: TrackEventInit = definedExternally) : Event {\n    open val track:
UnionAudioTrackOrTextTrackOrVideoTrack?\n\n    companion object {\n        val NONE: Short\n        val
CAPTURING_PHASE: Short\n        val AT_TARGET: Short\n        val BUBBLING_PHASE: Short\n
    }\n}\n\npublic external interface TrackEventInit : EventInit {\n    var track:

```

```

UnionAudioTrackOrTextTrackOrVideoTrack? /* = null */\n    get() = definedExternally\n    set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun TrackEventInit(track:
UnionAudioTrackOrTextTrackOrVideoTrack? = null, bubbles: Boolean? = false, cancelable: Boolean? = false,
composed: Boolean? = false): TrackEventInit {\n    val o = js("{}")\n    o["track"] = track\n    o["bubbles"] =
bubbles\n    o["cancelable"] = cancelable\n    o["composed"] = composed\n    return o\n}\n\n/**\n * Exposes the
JavaScript [HTMLMapElement](https://developer.mozilla.org/en/docs/Web/API/HTMLMapElement) to Kotlin\n
*/\npublic external abstract class HTMLMapElement : HTMLElement {\n    open var name: String\n    open val
areas: HTMLCollection\n\n    companion object {\n        val ELEMENT_NODE: Short\n        val
ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val
ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE: Short\n        val
PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLAreaElement](https://developer.mozilla.org/en/docs/Web/API/HTMLAreaElement) to Kotlin\n
*/\npublic external abstract class HTMLAreaElement : HTMLElement, HTMLHyperlinkElementUtils {\n    open var alt:
String\n    open var coords: String\n    open var shape: String\n    open var target: String\n    open var download:
String\n    open var ping: String\n    open var rel: String\n    open val relList: DOMTokenList\n    open var
referrerPolicy: String\n    open var noHref: Boolean\n\n    companion object {\n        val ELEMENT_NODE:
Short\n        val ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE:
Short\n        val ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE: Short\n        val
PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLTableElement](https://developer.mozilla.org/en/docs/Web/API/HTMLTableElement) to Kotlin\n
*/\npublic external abstract class HTMLTableElement : HTMLElement {\n    open var caption:
HTMLTableCaptionElement?\n    open var tHead: HTMLTableSectionElement?\n    open var tFoot:
HTMLTableSectionElement?\n    open val tBodies: HTMLCollection\n    open val rows: HTMLCollection\n    open
var align: String\n    open var border: String\n    open var frame: String\n    open var rules: String\n    open var
summary: String\n    open var width: String\n    open var bgColor: String\n    open var cellPadding: String\n    open
var cellSpacing: String\n    fun createCaption(): HTMLTableCaptionElement\n    fun deleteCaption()\n    fun
createTHead(): HTMLTableSectionElement\n    fun deleteTHead()\n    fun createTFoot():
HTMLTableSectionElement\n    fun deleteTFoot()\n    fun createTBody(): HTMLTableSectionElement\n    fun
insertRow(index: Int = definedExternally): HTMLTableRowElement\n    fun deleteRow(index: Int)\n\n    companion object {\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val
TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE:
Short\n        val ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val
COMMENT_NODE: Short\n        val DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n
        val DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n

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    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLTableCaptionElement](https://developer.mozilla.org/en/docs/Web/API/HTMLTableCaptionElement) to
Kotlin\n * \npublic external abstract class HTMLTableCaptionElement : HTMLInputElement {\n    open var align:
String\n\n    companion object {\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n
val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE:
Short\n        val ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val
COMMENT_NODE: Short\n        val DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n
        val DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLTableColElement](https://developer.mozilla.org/en/docs/Web/API/HTMLTableColElement) to Kotlin\n
* \npublic external abstract class HTMLTableColElement : HTMLInputElement {\n    open var span: Int\n    open var
align: String\n    open var ch: String\n    open var chOff: String\n    open var vAlign: String\n    open var width:
String\n\n    companion object {\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n
val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE:
Short\n        val ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val
COMMENT_NODE: Short\n        val DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n
        val DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLTableSectionElement](https://developer.mozilla.org/en/docs/Web/API/HTMLTableSectionElement) to
Kotlin\n * \npublic external abstract class HTMLTableSectionElement : HTMLInputElement {\n    open val rows:
HTMLCollection\n    open var align: String\n    open var ch: String\n    open var chOff: String\n    open var vAlign:
String\n    fun insertRow(index: Int = definedExternally): HTMLInputElement\n    fun deleteRow(index: Int)\n\n
companion object {\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val
TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE:
Short\n        val ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val
COMMENT_NODE: Short\n        val DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n
        val DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLTableRowElement](https://developer.mozilla.org/en/docs/Web/API/HTMLTableRowElement) to Kotlin\n
* \npublic external abstract class HTMLTableRowElement : HTMLInputElement {\n    open val rowIndex: Int\n    open
val sectionRowIndex: Int\n    open val cells: HTMLCollection\n    open var align: String\n    open var ch: String\n
open var chOff: String\n    open var vAlign: String\n    open var bgColor: String\n    fun insertCell(index: Int =
definedExternally): HTMLInputElement\n    fun deleteCell(index: Int)\n\n    companion object {\n        val
ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val
CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE:
Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val

```

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DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    } \n} \n \n /** \n * Exposes the JavaScript
[HTMLTableCellElement](https://developer.mozilla.org/en/docs/Web/API/HTMLTableCellElement) to Kotlin \n
* \n public external abstract class HTMLTableCellElement : HTMLElement { \n    open var colSpan: Int \n    open var
rowSpan: Int \n    open var headers: String \n    open val cellIndex: Int \n    open var scope: String \n    open var abbr:
String \n    open var align: String \n    open var axis: String \n    open var height: String \n    open var width: String \n
    open var ch: String \n    open var chOff: String \n    open var noWrap: Boolean \n    open var vAlign: String \n    open
var bgColor: String \n \n    companion object { \n        val ELEMENT_NODE: Short \n        val ATTRIBUTE_NODE:
Short \n        val TEXT_NODE: Short \n        val CDATA_SECTION_NODE: Short \n        val
ENTITY_REFERENCE_NODE: Short \n        val ENTITY_NODE: Short \n        val
PROCESSING_INSTRUCTION_NODE: Short \n        val COMMENT_NODE: Short \n        val
DOCUMENT_NODE: Short \n        val DOCUMENT_TYPE_NODE: Short \n        val
DOCUMENT_FRAGMENT_NODE: Short \n        val NOTATION_NODE: Short \n        val
DOCUMENT_POSITION_DISCONNECTED: Short \n        val DOCUMENT_POSITION_PRECEDING: Short \n
        val DOCUMENT_POSITION_FOLLOWING: Short \n        val DOCUMENT_POSITION_CONTAINS: Short \n
        val DOCUMENT_POSITION_CONTAINED_BY: Short \n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short \n    } \n} \n \n /** \n * Exposes the JavaScript
[HTMLFormElement](https://developer.mozilla.org/en/docs/Web/API/HTMLFormElement) to Kotlin \n
* \n public external abstract class HTMLFormElement : HTMLElement { \n    open var acceptCharset: String \n    open var
action: String \n    open var autocomplete: String \n    open var enctype: String \n    open var encoding: String \n    open
var method: String \n    open var name: String \n    open var noValidate: Boolean \n    open var target: String \n    open
val elements: HTMLFormControlsCollection \n    open val length: Int \n    fun submit() \n    fun reset() \n    fun
checkValidity(): Boolean \n    fun reportValidity(): Boolean \n \n    companion object { \n        val ELEMENT_NODE:
Short \n        val ATTRIBUTE_NODE: Short \n        val TEXT_NODE: Short \n        val CDATA_SECTION_NODE:
Short \n        val ENTITY_REFERENCE_NODE: Short \n        val ENTITY_NODE: Short \n        val
PROCESSING_INSTRUCTION_NODE: Short \n        val COMMENT_NODE: Short \n        val
DOCUMENT_NODE: Short \n        val DOCUMENT_TYPE_NODE: Short \n        val
DOCUMENT_FRAGMENT_NODE: Short \n        val NOTATION_NODE: Short \n        val
DOCUMENT_POSITION_DISCONNECTED: Short \n        val DOCUMENT_POSITION_PRECEDING: Short \n
        val DOCUMENT_POSITION_FOLLOWING: Short \n        val DOCUMENT_POSITION_CONTAINS: Short \n
        val DOCUMENT_POSITION_CONTAINED_BY: Short \n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short \n    } \n} \n \n @kotlin.internal.InlineOnly \n public inline operator fun HTMLFormElement.get(index: Int): Element? =
asDynamic()[index] \n \n @kotlin.internal.InlineOnly \n public inline operator fun HTMLFormElement.get(name:
String): UnionElementOrRadioNodeList? = asDynamic()[name] \n \n /** \n * Exposes the JavaScript
[HTMLLabelElement](https://developer.mozilla.org/en/docs/Web/API/HTMLLabelElement) to Kotlin \n
* \n public external abstract class HTMLLabelElement : HTMLElement { \n    open val form: HTMLFormElement? \n    open
var htmlFor: String \n    open val control: HTMLElement? \n \n    companion object { \n        val ELEMENT_NODE:
Short \n        val ATTRIBUTE_NODE: Short \n        val TEXT_NODE: Short \n        val CDATA_SECTION_NODE:
Short \n        val ENTITY_REFERENCE_NODE: Short \n        val ENTITY_NODE: Short \n        val
PROCESSING_INSTRUCTION_NODE: Short \n        val COMMENT_NODE: Short \n        val
DOCUMENT_NODE: Short \n        val DOCUMENT_TYPE_NODE: Short \n        val
DOCUMENT_FRAGMENT_NODE: Short \n        val NOTATION_NODE: Short \n        val
DOCUMENT_POSITION_DISCONNECTED: Short \n        val DOCUMENT_POSITION_PRECEDING: Short \n
        val DOCUMENT_POSITION_FOLLOWING: Short \n        val DOCUMENT_POSITION_CONTAINS: Short \n
        val DOCUMENT_POSITION_CONTAINED_BY: Short \n        val

```

DOCUMENT\_POSITION\_IMPLEMENTATION\_SPECIFIC: Short } } \n \n /\*\* \n \* Exposes the JavaScript [HTMLInputElement](https://developer.mozilla.org/en/docs/Web/API/HTMLInputElement) to Kotlin \n \* \n public external abstract class HTMLInputElement : HTMLElement { \n open var accept: String \n open var alt: String \n open var autocomplete: String \n open var autofocus: Boolean \n open var defaultChecked: Boolean \n open var checked: Boolean \n open var dirName: String \n open var disabled: Boolean \n open val form: HTMLFormElement? \n open val files: FileList? \n open var formAction: String \n open var formEnctype: String \n open var formMethod: String \n open var formNoValidate: Boolean \n open var formTarget: String \n open var height: Int \n open var indeterminate: Boolean \n open var inputMode: String \n open val list: HTMLElement? \n open var max: String \n open var maxLength: Int \n open var min: String \n open var minLength: Int \n open var multiple: Boolean \n open var name: String \n open var pattern: String \n open var placeholder: String \n open var readOnly: Boolean \n open var required: Boolean \n open var size: Int \n open var src: String \n open var step: String \n open var type: String \n open var defaultValue: String \n open var value: String \n open var valueAsDate: dynamic \n open var valueAsNumber: Double \n open var width: Int \n open val willValidate: Boolean \n open val validity: ValidityState \n open val validationMessage: String \n open val labels: NodeList \n open var selectionStart: Int? \n open var selectionEnd: Int? \n open var selectionDirection: String? \n open var align: String \n open var useMap: String \n fun stepUp(n: Int = definedExternally) \n fun stepDown(n: Int = definedExternally) \n fun checkValidity(): Boolean \n fun reportValidity(): Boolean \n fun setCustomValidity(error: String) \n fun select() \n fun setRangeText(replacement: String) \n fun setRangeText(replacement: String, start: Int, end: Int, selectionMode: SelectionMode = definedExternally) \n fun setSelectionRange(start: Int, end: Int, direction: String = definedExternally) \n \n companion object { \n val ELEMENT\_NODE: Short \n val ATTRIBUTE\_NODE: Short \n val TEXT\_NODE: Short \n val CDATA\_SECTION\_NODE: Short \n val ENTITY\_REFERENCE\_NODE: Short \n val ENTITY\_NODE: Short \n val PROCESSING\_INSTRUCTION\_NODE: Short \n val COMMENT\_NODE: Short \n val DOCUMENT\_NODE: Short \n val DOCUMENT\_TYPE\_NODE: Short \n val DOCUMENT\_FRAGMENT\_NODE: Short \n val NOTATION\_NODE: Short \n val DOCUMENT\_POSITION\_DISCONNECTED: Short \n val DOCUMENT\_POSITION\_PRECEDING: Short \n val DOCUMENT\_POSITION\_FOLLOWING: Short \n val DOCUMENT\_POSITION\_CONTAINS: Short \n val DOCUMENT\_POSITION\_CONTAINED\_BY: Short \n } \n }

DOCUMENT\_POSITION\_IMPLEMENTATION\_SPECIFIC: Short } } \n \n /\*\* \n \* Exposes the JavaScript [HTMLButtonElement](https://developer.mozilla.org/en/docs/Web/API/HTMLButtonElement) to Kotlin \n \* \n public external abstract class HTMLButtonElement : HTMLElement { \n open var autofocus: Boolean \n open var disabled: Boolean \n open val form: HTMLFormElement? \n open var formAction: String \n open var formEnctype: String \n open var formMethod: String \n open var formNoValidate: Boolean \n open var formTarget: String \n open var name: String \n open var type: String \n open var value: String \n open var menu: HTMLMenuElement? \n open val willValidate: Boolean \n open val validity: ValidityState \n open val validationMessage: String \n open val labels: NodeList \n fun checkValidity(): Boolean \n fun reportValidity(): Boolean \n fun setCustomValidity(error: String) \n \n companion object { \n val ELEMENT\_NODE: Short \n val ATTRIBUTE\_NODE: Short \n val TEXT\_NODE: Short \n val CDATA\_SECTION\_NODE: Short \n val ENTITY\_REFERENCE\_NODE: Short \n val ENTITY\_NODE: Short \n val PROCESSING\_INSTRUCTION\_NODE: Short \n val COMMENT\_NODE: Short \n val DOCUMENT\_NODE: Short \n val DOCUMENT\_TYPE\_NODE: Short \n val DOCUMENT\_FRAGMENT\_NODE: Short \n val NOTATION\_NODE: Short \n val DOCUMENT\_POSITION\_DISCONNECTED: Short \n val DOCUMENT\_POSITION\_PRECEDING: Short \n val DOCUMENT\_POSITION\_FOLLOWING: Short \n val DOCUMENT\_POSITION\_CONTAINS: Short \n val DOCUMENT\_POSITION\_CONTAINED\_BY: Short \n } \n }

DOCUMENT\_POSITION\_IMPLEMENTATION\_SPECIFIC: Short } } \n \n /\*\* \n \* Exposes the JavaScript [HTMLSelectElement](https://developer.mozilla.org/en/docs/Web/API/HTMLSelectElement) to Kotlin \n \* \n public

```

external abstract class HTMLSelectElement : HTMLInputElement, ItemArrayLike<Element> {
    open var autocomplete: String
    open var autofocus: Boolean
    open var disabled: Boolean
    open val form: HTMLFormElement?
    open var multiple: Boolean
    open var name: String
    open var required: Boolean
    open var size: Int
    open val type: String
    open val options: HTMLOptionsCollection
    override var length: Int
    open val selectedOptions: HTMLCollection
    open var selectedIndex: Int
    open var value: String
    open val willValidate: Boolean
    open val validity: ValidityState
    open val validationMessage: String
    open val labels: NodeList
    fun namedItem(name: String): HTMLOptionElement?
    fun add(element: UnionHTMLOptGroupElementOrHTMLOptionElement, before: dynamic = definedExternally)
    fun remove(index: Int)
    fun checkValidity(): Boolean
    fun reportValidity(): Boolean
    fun setCustomValidity(error: String)
    override fun item(index: Int): Element?
    companion object {
        val ELEMENT_NODE: Short
        val ATTRIBUTE_NODE: Short
        val TEXT_NODE: Short
        val CDATA_SECTION_NODE: Short
        val ENTITY_REFERENCE_NODE: Short
        val ENTITY_NODE: Short
        val PROCESSING_INSTRUCTION_NODE: Short
        val COMMENT_NODE: Short
        val DOCUMENT_NODE: Short
        val DOCUMENT_TYPE_NODE: Short
        val DOCUMENT_FRAGMENT_NODE: Short
        val NOTATION_NODE: Short
        val DOCUMENT_POSITION_DISCONNECTED: Short
        val DOCUMENT_POSITION_PRECEDING: Short
        val DOCUMENT_POSITION_FOLLOWING: Short
        val DOCUMENT_POSITION_CONTAINS: Short
        val DOCUMENT_POSITION_CONTAINED_BY: Short
        val DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short
    }
}

@kotlin.internal.InlineOnly
public inline operator fun HTMLSelectElement.get(index: Int): Element? =
    asDynamic()[index]

@kotlin.internal.InlineOnly
public inline operator fun HTMLSelectElement.set(index: Int, option: HTMLOptionElement?) {
    asDynamic()[index] = option
}

/** Exposes the JavaScript [HTMLDataListElement](https://developer.mozilla.org/en/docs/Web/API/HTMLDataListElement) to Kotlin */
public external abstract class HTMLDataListElement : HTMLInputElement {
    open val options: HTMLCollection
    companion object {
        val ELEMENT_NODE: Short
        val ATTRIBUTE_NODE: Short
        val TEXT_NODE: Short
        val CDATA_SECTION_NODE: Short
        val ENTITY_REFERENCE_NODE: Short
        val ENTITY_NODE: Short
        val PROCESSING_INSTRUCTION_NODE: Short
        val COMMENT_NODE: Short
        val DOCUMENT_NODE: Short
        val DOCUMENT_TYPE_NODE: Short
        val DOCUMENT_FRAGMENT_NODE: Short
        val NOTATION_NODE: Short
        val DOCUMENT_POSITION_DISCONNECTED: Short
        val DOCUMENT_POSITION_PRECEDING: Short
        val DOCUMENT_POSITION_FOLLOWING: Short
        val DOCUMENT_POSITION_CONTAINS: Short
        val DOCUMENT_POSITION_CONTAINED_BY: Short
        val DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short
    }
}

/** Exposes the JavaScript [HTMLOptGroupElement](https://developer.mozilla.org/en/docs/Web/API/HTMLOptGroupElement) to Kotlin */
public external abstract class HTMLOptGroupElement : HTMLInputElement,
    UnionHTMLOptGroupElementOrHTMLOptionElement {
    open var disabled: Boolean
    open var label: String
    companion object {
        val ELEMENT_NODE: Short
        val ATTRIBUTE_NODE: Short
        val TEXT_NODE: Short
        val CDATA_SECTION_NODE: Short
        val ENTITY_REFERENCE_NODE: Short
        val ENTITY_NODE: Short
        val PROCESSING_INSTRUCTION_NODE: Short
        val COMMENT_NODE: Short
        val DOCUMENT_NODE: Short
        val DOCUMENT_TYPE_NODE: Short
        val DOCUMENT_FRAGMENT_NODE: Short
        val NOTATION_NODE: Short
        val DOCUMENT_POSITION_DISCONNECTED: Short
        val DOCUMENT_POSITION_PRECEDING: Short
        val DOCUMENT_POSITION_FOLLOWING: Short
        val DOCUMENT_POSITION_CONTAINS: Short
        val DOCUMENT_POSITION_CONTAINED_BY: Short
        val DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short
    }
}

/** Exposes the JavaScript [HTMLOptionElement](https://developer.mozilla.org/en/docs/Web/API/HTMLOptionElement) to Kotlin */
public external abstract class HTMLOptionElement : HTMLInputElement,

```

```

UnionHTMLOptGroupElementOrHTMLOptionElement {
    open var disabled: Boolean
    open val form: HTMLFormElement?
    open var label: String
    open var defaultSelected: Boolean
    open var selected: Boolean
    open var value: String
    open var text: String
    open val index: Int

    companion object {
        val ELEMENT_NODE: Short
        val ATTRIBUTE_NODE: Short
        val TEXT_NODE: Short
        val CDATA_SECTION_NODE: Short
        val ENTITY_REFERENCE_NODE: Short
        val ENTITY_NODE: Short
        val PROCESSING_INSTRUCTION_NODE: Short
        val COMMENT_NODE: Short
        val DOCUMENT_NODE: Short
        val DOCUMENT_TYPE_NODE: Short
        val DOCUMENT_FRAGMENT_NODE: Short
        val NOTATION_NODE: Short

        val DOCUMENT_POSITION_DISCONNECTED: Short
        val DOCUMENT_POSITION_PRECEDING: Short
        val DOCUMENT_POSITION_FOLLOWING: Short
        val DOCUMENT_POSITION_CONTAINS: Short
        val DOCUMENT_POSITION_CONTAINED_BY: Short

        DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short
    }
}

/** Exposes the JavaScript [HTMLTextAreaElement](https://developer.mozilla.org/en/docs/Web/API/HTMLTextAreaElement) to Kotlin
 *
 * \npublic external abstract class HTMLTextAreaElement : HTMLElement {
    open var autocomplete: String
    open var autofocus: Boolean
    open var cols: Int
    open var dirName: String
    open var disabled: Boolean
    open val form: HTMLFormElement?
    open var inputMode: String
    open var maxLength: Int
    open var minLength: Int
    open var name: String
    open var placeholder: String
    open var readOnly: Boolean
    open var required: Boolean
    open var rows: Int
    open var wrap: String
    open val type: String
    open var defaultValue: String
    open var value: String
    open val textLength: Int
    open val willValidate: Boolean
    open val validity: ValidityState
    open val validationMessage: String
    open val labels: NodeList
    open var selectionStart: Int?
    open var selectionEnd: Int?
    open var selectionDirection: String?
    fun checkValidity(): Boolean
    fun reportValidity(): Boolean
    fun setCustomValidity(error: String)
    fun select()
    fun setRangeText(replacement: String)
    fun setRangeText(replacement: String, start: Int, end: Int, selectionMode: SelectionMode = definedExternally)
    fun setSelectionRange(start: Int, end: Int, direction: String = definedExternally)

    companion object {
        val ELEMENT_NODE: Short
        val ATTRIBUTE_NODE: Short
        val TEXT_NODE: Short
        val CDATA_SECTION_NODE: Short
        val ENTITY_REFERENCE_NODE: Short
        val ENTITY_NODE: Short
        val PROCESSING_INSTRUCTION_NODE: Short
        val COMMENT_NODE: Short
        val DOCUMENT_NODE: Short
        val DOCUMENT_TYPE_NODE: Short
        val DOCUMENT_FRAGMENT_NODE: Short
        val NOTATION_NODE: Short

        val DOCUMENT_POSITION_DISCONNECTED: Short
        val DOCUMENT_POSITION_PRECEDING: Short
        val DOCUMENT_POSITION_FOLLOWING: Short
        val DOCUMENT_POSITION_CONTAINS: Short
        val DOCUMENT_POSITION_CONTAINED_BY: Short

        DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short
    }
}

/** Exposes the JavaScript [HTMLKeygenElement](https://developer.mozilla.org/en/docs/Web/API/HTMLKeygenElement) to Kotlin
 *
 * \npublic external abstract class HTMLKeygenElement : HTMLElement {
    open var autofocus: Boolean
    open var challenge: String
    open var disabled: Boolean
    open val form: HTMLFormElement?
    open var keytype: String
    open var name: String
    open val type: String
    open val willValidate: Boolean
    open val validity: ValidityState
    open val validationMessage: String
    open val labels: NodeList
    fun checkValidity(): Boolean
    fun reportValidity(): Boolean
    fun setCustomValidity(error: String)

    companion object {
        val ELEMENT_NODE: Short
        val ATTRIBUTE_NODE: Short
        val TEXT_NODE: Short
        val CDATA_SECTION_NODE: Short
        val ENTITY_REFERENCE_NODE: Short
        val ENTITY_NODE: Short
        val PROCESSING_INSTRUCTION_NODE: Short
        val COMMENT_NODE: Short
        val DOCUMENT_NODE: Short
        val DOCUMENT_TYPE_NODE: Short
        val DOCUMENT_FRAGMENT_NODE: Short
        val NOTATION_NODE: Short

        val DOCUMENT_POSITION_DISCONNECTED: Short
        val DOCUMENT_POSITION_PRECEDING: Short
        val DOCUMENT_POSITION_FOLLOWING: Short
        val DOCUMENT_POSITION_CONTAINS: Short
        val DOCUMENT_POSITION_CONTAINED_BY: Short
    }
}

```

DOCUMENT\_POSITION\_IMPLEMENTATION\_SPECIFIC: Short\n }\n}\n\n/\*\*\n \* Exposes the JavaScript [HTMLOutputElement](https://developer.mozilla.org/en/docs/Web/API/HTMLOutputElement) to Kotlin\n \*\n\npublic external abstract class HTMLOutputElement : HTMLElement {\n open val htmlFor: DOMTokenList\n open val form: HTMLFormElement?\n open var name: String\n open val type: String\n open var defaultValue: String\n open var value: String\n open val willValidate: Boolean\n open val validity: ValidityState\n open val validationMessage: String\n open val labels: NodeList\n fun checkValidity(): Boolean\n fun reportValidity(): Boolean\n fun setCustomValidity(error: String)\n\n companion object {\n val ELEMENT\_NODE: Short\n val ATTRIBUTE\_NODE: Short\n val TEXT\_NODE: Short\n val CDATA\_SECTION\_NODE: Short\n val ENTITY\_REFERENCE\_NODE: Short\n val ENTITY\_NODE: Short\n val PROCESSING\_INSTRUCTION\_NODE: Short\n val COMMENT\_NODE: Short\n val DOCUMENT\_NODE: Short\n val DOCUMENT\_TYPE\_NODE: Short\n val DOCUMENT\_FRAGMENT\_NODE: Short\n val NOTATION\_NODE: Short\n val DOCUMENT\_POSITION\_DISCONNECTED: Short\n val DOCUMENT\_POSITION\_PRECEDING: Short\n val DOCUMENT\_POSITION\_FOLLOWING: Short\n val DOCUMENT\_POSITION\_CONTAINS: Short\n val DOCUMENT\_POSITION\_CONTAINED\_BY: Short\n val

DOCUMENT\_POSITION\_IMPLEMENTATION\_SPECIFIC: Short\n }\n}\n\n/\*\*\n \* Exposes the JavaScript [HTMLProgressElement](https://developer.mozilla.org/en/docs/Web/API/HTMLProgressElement) to Kotlin\n \*\n\npublic external abstract class HTMLProgressElement : HTMLElement {\n open var value: Double\n open var max: Double\n open val position: Double\n open val labels: NodeList\n\n companion object {\n val ELEMENT\_NODE: Short\n val ATTRIBUTE\_NODE: Short\n val TEXT\_NODE: Short\n val CDATA\_SECTION\_NODE: Short\n val ENTITY\_REFERENCE\_NODE: Short\n val ENTITY\_NODE: Short\n val PROCESSING\_INSTRUCTION\_NODE: Short\n val COMMENT\_NODE: Short\n val DOCUMENT\_NODE: Short\n val DOCUMENT\_TYPE\_NODE: Short\n val DOCUMENT\_FRAGMENT\_NODE: Short\n val NOTATION\_NODE: Short\n val DOCUMENT\_POSITION\_DISCONNECTED: Short\n val DOCUMENT\_POSITION\_PRECEDING: Short\n val DOCUMENT\_POSITION\_FOLLOWING: Short\n val DOCUMENT\_POSITION\_CONTAINS: Short\n val DOCUMENT\_POSITION\_CONTAINED\_BY: Short\n val

DOCUMENT\_POSITION\_IMPLEMENTATION\_SPECIFIC: Short\n }\n}\n\n/\*\*\n \* Exposes the JavaScript [HTMLMeterElement](https://developer.mozilla.org/en/docs/Web/API/HTMLMeterElement) to Kotlin\n \*\n\npublic external abstract class HTMLMeterElement : HTMLElement {\n open var value: Double\n open var min: Double\n open var max: Double\n open var low: Double\n open var high: Double\n open var optimum: Double\n open val labels: NodeList\n\n companion object {\n val ELEMENT\_NODE: Short\n val ATTRIBUTE\_NODE: Short\n val TEXT\_NODE: Short\n val CDATA\_SECTION\_NODE: Short\n val ENTITY\_REFERENCE\_NODE: Short\n val ENTITY\_NODE: Short\n val PROCESSING\_INSTRUCTION\_NODE: Short\n val COMMENT\_NODE: Short\n val DOCUMENT\_NODE: Short\n val DOCUMENT\_TYPE\_NODE: Short\n val DOCUMENT\_FRAGMENT\_NODE: Short\n val NOTATION\_NODE: Short\n val DOCUMENT\_POSITION\_DISCONNECTED: Short\n val DOCUMENT\_POSITION\_PRECEDING: Short\n val DOCUMENT\_POSITION\_FOLLOWING: Short\n val DOCUMENT\_POSITION\_CONTAINS: Short\n val DOCUMENT\_POSITION\_CONTAINED\_BY: Short\n val

DOCUMENT\_POSITION\_IMPLEMENTATION\_SPECIFIC: Short\n }\n}\n\n/\*\*\n \* Exposes the JavaScript [HTMLFieldSetElement](https://developer.mozilla.org/en/docs/Web/API/HTMLFieldSetElement) to Kotlin\n \*\n\npublic external abstract class HTMLFieldSetElement : HTMLElement {\n open var disabled: Boolean\n open val form: HTMLFormElement?\n open var name: String\n open val type: String\n open val elements: HTMLCollection\n open val willValidate: Boolean\n open val validity: ValidityState\n open val validationMessage: String\n fun checkValidity(): Boolean\n fun reportValidity(): Boolean\n fun setCustomValidity(error: String)\n\n companion object {\n val ELEMENT\_NODE: Short\n val ATTRIBUTE\_NODE: Short\n val TEXT\_NODE: Short\n val CDATA\_SECTION\_NODE: Short\n val



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ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val
PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }n}\n\n/**\n * Exposes the JavaScript
[HTMLLegendElement](https://developer.mozilla.org/en/docs/Web/API/HTMLLegendElement) to Kotlin\n
*\npublic external abstract class HTMLLegendElement : HTMLInputElement {\n    open val form:
HTMLFormElement?\n    open var align: String\n\n    companion object {\n        val ELEMENT_NODE: Short\n
        val ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n
        val ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE: Short\n        val
        PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
        DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
        DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
        DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
        DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }n}\n\n/**\n * Exposes the JavaScript
[ValidityState](https://developer.mozilla.org/en/docs/Web/API/ValidityState) to Kotlin\n
*\npublic external
abstract class ValidityState {\n    open val valueMissing: Boolean\n    open val typeMismatch: Boolean\n    open val
patternMismatch: Boolean\n    open val tooLong: Boolean\n    open val tooShort: Boolean\n    open val
rangeUnderflow: Boolean\n    open val rangeOverflow: Boolean\n    open val stepMismatch: Boolean\n    open val
badInput: Boolean\n    open val customError: Boolean\n    open val valid: Boolean\n}\n\n/**\n * Exposes the
JavaScript [HTMLDetailsElement](https://developer.mozilla.org/en/docs/Web/API/HTMLDetailsElement) to
Kotlin\n
*\npublic external abstract class HTMLDetailsElement : HTMLInputElement {\n    open var open: Boolean\n\n
    companion object {\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val
        TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE:
        Short\n        val ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val
        COMMENT_NODE: Short\n        val DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n
        val DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
        DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
        DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }n}\n\npublic external abstract class
HTMLMenuElement : HTMLInputElement {\n    open var type: String\n    open var label: String\n    open var compact:
Boolean\n\n    companion object {\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n
        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE:
        Short\n        val ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val
        COMMENT_NODE: Short\n        val DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n
        val DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
        DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
        DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }n}\n\npublic external abstract class
HTMLMenuItemElement : HTMLInputElement {\n    open var type: String\n    open var label: String\n    open var icon:
String\n    open var disabled: Boolean\n    open var checked: Boolean\n    open var radiogroup: String\n    open var

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default: Boolean\n\n companion object {\n    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }
\n\npublic external open class RelatedEvent(type: String, eventInitDict: RelatedEventInit = definedExternally) : Event {\n    open val relatedTarget: EventTarget?
\n\n companion object {\n    val NONE: Short\n    val CAPTURING_PHASE: Short\n    val AT_TARGET: Short\n    val BUBBLING_PHASE: Short\n }
\n\npublic external interface RelatedEventInit : EventInit {\n    var relatedTarget: EventTarget? /* = null */\n    get() = definedExternally\n    set(value) = definedExternally
\n}
\n\n@kotlin.internal.InlineOnly\n\npublic inline fun RelatedEventInit(relatedTarget: EventTarget? = null, bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? = false): RelatedEventInit {\n    val o = js("{}")\n    o["relatedTarget"] = relatedTarget\n    o["bubbles"] = bubbles\n    o["cancelable"] = cancelable\n    o["composed"] = composed\n    return o
\n}
\n\n/**\n * Exposes the JavaScript [HTMLDialogElement](https://developer.mozilla.org/en/docs/Web/API/HTMLDialogElement) to Kotlin
\n */
\n\npublic external abstract class HTMLDialogElement : HTMLElement {\n    open var open: Boolean\n    open var returnValue: String\n    fun show(anchor: UnionElementOrMouseEvent = definedExternally)\n    fun showModal(anchor: UnionElementOrMouseEvent = definedExternally)\n    fun close(returnValue: String = definedExternally)
\n\n companion object {\n    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }
\n}
\n\n/**\n * Exposes the JavaScript [HTMLScriptElement](https://developer.mozilla.org/en/docs/Web/API/HTMLScriptElement) to Kotlin
\n */
\n\npublic external abstract class HTMLScriptElement : HTMLElement, HTMLORSVGScriptElement {\n    open var src: String\n    open var type: String\n    open var charset: String\n    open var async: Boolean\n    open var defer: Boolean\n    open var crossOrigin: String?\n    open var text: String\n    open var nonce: String\n    open var event: String\n    open var htmlFor: String
\n\n companion object {\n    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }
\n}
\n\n/**\n * Exposes the JavaScript [HTMLTemplateElement](https://developer.mozilla.org/en/docs/Web/API/HTMLTemplateElement) to Kotlin
\n */
\n\npublic external abstract class HTMLTemplateElement : HTMLElement {\n    open val content:

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DocumentFragment companion object {
    val ELEMENT_NODE: Short
    val ATTRIBUTE_NODE: Short
    val TEXT_NODE: Short
    val CDATA_SECTION_NODE: Short
    val ENTITY_REFERENCE_NODE: Short
    val ENTITY_NODE: Short
    val PROCESSING_INSTRUCTION_NODE: Short
    val COMMENT_NODE: Short
    val DOCUMENT_NODE: Short
    val DOCUMENT_TYPE_NODE: Short
    val DOCUMENT_FRAGMENT_NODE: Short
    val NOTATION_NODE: Short
    val DOCUMENT_POSITION_DISCONNECTED: Short
    val DOCUMENT_POSITION_PRECEDING: Short
    val DOCUMENT_POSITION_FOLLOWING: Short
    val DOCUMENT_POSITION_CONTAINS: Short
    val DOCUMENT_POSITION_CONTAINED_BY: Short
}

DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short }

/** Exposes the JavaScript [HTMLSlotElement](https://developer.mozilla.org/en/docs/Web/API/HTMLSlotElement) to Kotlin */
public external abstract class HTMLSlotElement : HTMLElement {
    open var name: String
    fun assignedNodes(options: AssignedNodesOptions = definedExternally): Array<Node>
    companion object {
        val ELEMENT_NODE: Short
        val ATTRIBUTE_NODE: Short
        val TEXT_NODE: Short
        val CDATA_SECTION_NODE: Short
        val ENTITY_REFERENCE_NODE: Short
        val ENTITY_NODE: Short
        val PROCESSING_INSTRUCTION_NODE: Short
        val COMMENT_NODE: Short
        val DOCUMENT_NODE: Short
        val DOCUMENT_TYPE_NODE: Short
        val DOCUMENT_FRAGMENT_NODE: Short
        val NOTATION_NODE: Short
        val DOCUMENT_POSITION_DISCONNECTED: Short
        val DOCUMENT_POSITION_PRECEDING: Short
        val DOCUMENT_POSITION_FOLLOWING: Short
        val DOCUMENT_POSITION_CONTAINS: Short
        val DOCUMENT_POSITION_CONTAINED_BY: Short
    }
}

DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short }

public external interface AssignedNodesOptions {
    var flatten: Boolean? /* = false */
    get() = definedExternally
    set(value) = definedExternally
}

@kotlin.internal.InlineOnly
public inline fun AssignedNodesOptions(flatten: Boolean? = false): AssignedNodesOptions {
    val o = js("{}")
    o["flatten"] = flatten
    return o
}

/** Exposes the JavaScript [HTMLCanvasElement](https://developer.mozilla.org/en/docs/Web/API/HTMLCanvasElement) to Kotlin */
public external abstract class HTMLCanvasElement : HTMLElement, CanvasImageSource,
    TexImageSource {
    open var width: Int
    open var height: Int
    fun getContext(contextId: String, vararg arguments: Any?): RenderingContext?
    fun toDataURL(type: String = definedExternally, quality: Any? = definedExternally): String
    fun toBlob(_callback: (Blob?) -> Unit, type: String = definedExternally, quality: Any? = definedExternally)
    companion object {
        val ELEMENT_NODE: Short
        val ATTRIBUTE_NODE: Short
        val TEXT_NODE: Short
        val CDATA_SECTION_NODE: Short
        val ENTITY_REFERENCE_NODE: Short
        val ENTITY_NODE: Short
        val PROCESSING_INSTRUCTION_NODE: Short
        val COMMENT_NODE: Short
        val DOCUMENT_NODE: Short
        val DOCUMENT_TYPE_NODE: Short
        val DOCUMENT_FRAGMENT_NODE: Short
        val NOTATION_NODE: Short
        val DOCUMENT_POSITION_DISCONNECTED: Short
        val DOCUMENT_POSITION_PRECEDING: Short
        val DOCUMENT_POSITION_FOLLOWING: Short
        val DOCUMENT_POSITION_CONTAINS: Short
        val DOCUMENT_POSITION_CONTAINED_BY: Short
    }
}

DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short }

public external interface CanvasRenderingContext2DSettings {
    var alpha: Boolean? /* = true */
    get() = definedExternally
    set(value) = definedExternally
}

@kotlin.internal.InlineOnly
public inline fun CanvasRenderingContext2DSettings(alpha: Boolean? = true): CanvasRenderingContext2DSettings {
    val o = js("{}")
    o["alpha"] = alpha
    return o
}

/** Exposes the JavaScript [CanvasRenderingContext2D](https://developer.mozilla.org/en/docs/Web/API/CanvasRenderingContext2D) to Kotlin */
public external abstract class CanvasRenderingContext2D : CanvasState, CanvasTransform,
    CanvasCompositing, CanvasImageSmoothing, CanvasFillStrokeStyles, CanvasShadowStyles, CanvasFilters,
    CanvasRect, CanvasDrawPath, CanvasUserInterface, CanvasText, CanvasDrawImage, CanvasHitRegion,

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CanvasImageData, CanvasPathDrawingStyles, CanvasTextDrawingStyles, CanvasPath, RenderingContext {\n
open val canvas: HTMLCanvasElement\n}\n\npublic external interface CanvasState {\n fun save()\n fun
restore()\n}\n\npublic external interface CanvasTransform {\n fun scale(x: Double, y: Double)\n fun
rotate(angle: Double)\n fun translate(x: Double, y: Double)\n fun transform(a: Double, b: Double, c: Double, d:
Double, e: Double, f: Double)\n fun getTransform(): DOMMatrix\n fun setTransform(a: Double, b: Double, c:
Double, d: Double, e: Double, f: Double)\n fun setTransform(transform: dynamic = definedExternally)\n fun
resetTransform()\n}\n\npublic external interface CanvasCompositing {\n var globalAlpha: Double\n var
globalCompositeOperation: String\n}\n\npublic external interface CanvasImageSmoothing {\n var
imageSmoothingEnabled: Boolean\n var imageSmoothingQuality: ImageSmoothingQuality\n}\n\npublic external
interface CanvasFillStrokeStyles {\n var strokeStyle: dynamic\n get() = definedExternally\n set(value) =
definedExternally\n var fillStyle: dynamic\n get() = definedExternally\n set(value) = definedExternally\n
fun createLinearGradient(x0: Double, y0: Double, x1: Double, y1: Double): CanvasGradient\n fun
createRadialGradient(x0: Double, y0: Double, r0: Double, x1: Double, y1: Double, r1: Double): CanvasGradient\n
fun createPattern(image: CanvasImageSource, repetition: String): CanvasPattern?\n}\n\npublic external interface
CanvasShadowStyles {\n var shadowOffsetX: Double\n var shadowOffsetY: Double\n var shadowBlur:
Double\n var shadowColor: String\n}\n\npublic external interface CanvasFilters {\n var filter:
String\n}\n\npublic external interface CanvasRect {\n fun clearRect(x: Double, y: Double, w: Double, h:
Double)\n fun fillRect(x: Double, y: Double, w: Double, h: Double)\n fun strokeRect(x: Double, y: Double, w:
Double, h: Double)\n}\n\npublic external interface CanvasDrawPath {\n fun beginPath()\n fun fill(fillRule:
CanvasFillRule = definedExternally)\n fun fill(path: Path2D, fillRule: CanvasFillRule = definedExternally)\n
fun stroke()\n fun stroke(path: Path2D)\n fun clip(fillRule: CanvasFillRule = definedExternally)\n fun
clip(path: Path2D, fillRule: CanvasFillRule = definedExternally)\n fun resetClip()\n fun isPointInPath(x:
Double, y: Double, fillRule: CanvasFillRule = definedExternally): Boolean\n fun isPointInPath(path: Path2D, x:
Double, y: Double, fillRule: CanvasFillRule = definedExternally): Boolean\n fun isPointInStroke(x: Double, y:
Double): Boolean\n fun isPointInStroke(path: Path2D, x: Double, y: Double): Boolean\n}\n\npublic external
interface CanvasUserInterface {\n fun drawFocusIfNeeded(element: Element)\n fun drawFocusIfNeeded(path:
Path2D, element: Element)\n fun scrollPathIntoView()\n fun scrollPathIntoView(path: Path2D)\n}\n\npublic
external interface CanvasText {\n fun fillText(text: String, x: Double, y: Double, maxWidth: Double =
definedExternally)\n fun strokeText(text: String, x: Double, y: Double, maxWidth: Double = definedExternally)\n
fun measureText(text: String): TextMetrics\n}\n\npublic external interface CanvasDrawImage {\n fun
drawImage(image: CanvasImageSource, dx: Double, dy: Double)\n fun drawImage(image: CanvasImageSource,
dx: Double, dy: Double, dw: Double, dh: Double)\n fun drawImage(image: CanvasImageSource, sx: Double, sy:
Double, sw: Double, sh: Double, dx: Double, dy: Double, dw: Double, dh: Double)\n}\n\npublic external interface
CanvasHitRegion {\n fun addHitRegion(options: HitRegionOptions = definedExternally)\n fun
removeHitRegion(id: String)\n fun clearHitRegions()\n}\n\npublic external interface CanvasImageData {\n fun
createImageData(sw: Double, sh: Double): ImageData\n fun createImageData(imagedata: ImageData):
ImageData\n fun getImageData(sx: Double, sy: Double, sw: Double, sh: Double): ImageData\n fun
putImageData(imagedata: ImageData, dx: Double, dy: Double)\n fun putImageData(imagedata: ImageData, dx:
Double, dy: Double, dirtyX: Double, dirtyY: Double, dirtyWidth: Double, dirtyHeight: Double)\n}\n\npublic
external interface CanvasPathDrawingStyles {\n var lineWidth: Double\n var lineCap: CanvasLineCap\n var
lineJoin: CanvasLineJoin\n var miterLimit: Double\n var lineDashOffset: Double\n fun setLineDash(segments:
Array<Double>)\n fun getLineDash(): Array<Double>\n}\n\npublic external interface CanvasTextDrawingStyles
{\n var font: String\n var textAlign: CanvasTextAlign\n var textBaseline: CanvasTextBaseline\n var
direction: CanvasDirection\n}\n\npublic external interface CanvasPath {\n fun closePath()\n fun moveTo(x:
Double, y: Double)\n fun lineTo(x: Double, y: Double)\n fun quadraticCurveTo(cpx: Double, cpy: Double, x:
Double, y: Double)\n fun bezierCurveTo(cp1x: Double, cp1y: Double, cp2x: Double, cp2y: Double, x: Double, y:
Double)\n fun arcTo(x1: Double, y1: Double, x2: Double, y2: Double, radius: Double)\n fun arcTo(x1: Double,
y1: Double, x2: Double, y2: Double, radiusX: Double, radiusY: Double, rotation: Double)\n fun rect(x: Double, y:

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Double, w: Double, h: Double)\n fun arc(x: Double, y: Double, radius: Double, startAngle: Double, endAngle:
Double, anticlockwise: Boolean = definedExternally)\n fun ellipse(x: Double, y: Double, radiusX: Double,
radiusY: Double, rotation: Double, startAngle: Double, endAngle: Double, anticlockwise: Boolean =
definedExternally)\n}\n\n/**\n * Exposes the JavaScript
[CanvasGradient](https://developer.mozilla.org/en/docs/Web/API/CanvasGradient) to Kotlin\n *\npublic external
abstract class CanvasGradient {\n fun addColorStop(offset: Double, color: String)\n}\n\n/**\n * Exposes the
JavaScript [CanvasPattern](https://developer.mozilla.org/en/docs/Web/API/CanvasPattern) to Kotlin\n *\npublic
external abstract class CanvasPattern {\n fun setTransform(transform: dynamic = definedExternally)\n}\n\n/**\n *
Exposes the JavaScript [TextMetrics](https://developer.mozilla.org/en/docs/Web/API/TextMetrics) to Kotlin\n
*\npublic external abstract class TextMetrics {\n open val width: Double\n open val actualBoundingBoxLeft:
Double\n open val actualBoundingBoxRight: Double\n open val fontBoundingBoxAscent: Double\n open val
fontBoundingBoxDescent: Double\n open val actualBoundingBoxAscent: Double\n open val
actualBoundingBoxDescent: Double\n open val emHeightAscent: Double\n open val emHeightDescent:
Double\n open val hangingBaseline: Double\n open val alphabeticBaseline: Double\n open val
ideographicBaseline: Double\n}\n\npublic external interface HitRegionOptions {\n var path: Path2D? /* = null
*\n get() = definedExternally\n set(value) = definedExternally\n var fillRule: CanvasFillRule? /* =
CanvasFillRule.NONZERO *\n get() = definedExternally\n set(value) = definedExternally\n var id:
String? /* = \"\" *\n get() = definedExternally\n set(value) = definedExternally\n var parentID: String? /*
= null *\n get() = definedExternally\n set(value) = definedExternally\n var cursor: String? /* = \"inherit\"
*\n get() = definedExternally\n set(value) = definedExternally\n var control: Element? /* = null *\n
get() = definedExternally\n set(value) = definedExternally\n var label: String? /* = null *\n get() =
definedExternally\n set(value) = definedExternally\n var role: String? /* = null *\n get() =
definedExternally\n set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
HitRegionOptions(path: Path2D? = null, fillRule: CanvasFillRule? = CanvasFillRule.NONZERO, id: String? = \"\",
parentID: String? = null, cursor: String? = \"inherit\", control: Element? = null, label: String? = null, role: String? =
null): HitRegionOptions {\n val o = js(\"({})\")\n o[\"path\"] = path\n o[\"fillRule\"] = fillRule\n o[\"id\"] =
id\n o[\"parentID\"] = parentID\n o[\"cursor\"] = cursor\n o[\"control\"] = control\n o[\"label\"] = label\n
o[\"role\"] = role\n return o\n}\n\n/**\n * Exposes the JavaScript
[ImageData](https://developer.mozilla.org/en/docs/Web/API/ImageData) to Kotlin\n *\npublic external open class
ImageData : ImageBitmapSource, TexImageSource {\n constructor(sw: Int, sh: Int)\n constructor(data:
Uint8ClampedArray, sw: Int, sh: Int = definedExternally)\n open val width: Int\n open val height: Int\n open
val data: Uint8ClampedArray\n}\n\n/**\n * Exposes the JavaScript
[Path2D](https://developer.mozilla.org/en/docs/Web/API/Path2D) to Kotlin\n *\npublic external open class
Path2D() : CanvasPath {\n constructor(path: Path2D)\n constructor(paths: Array<Path2D>, fillRule:
CanvasFillRule = definedExternally)\n constructor(d: String)\n fun addPath(path: Path2D, transform: dynamic =
definedExternally)\n override fun closePath()\n override fun moveTo(x: Double, y: Double)\n override fun
lineTo(x: Double, y: Double)\n override fun quadraticCurveTo(cpx: Double, cpy: Double, x: Double, y: Double)\n
override fun bezierCurveTo(cp1x: Double, cp1y: Double, cp2x: Double, cp2y: Double, x: Double, y: Double)\n
override fun arcTo(x1: Double, y1: Double, x2: Double, y2: Double, radius: Double)\n override fun arcTo(x1:
Double, y1: Double, x2: Double, y2: Double, radiusX: Double, radiusY: Double, rotation: Double)\n override fun
rect(x: Double, y: Double, w: Double, h: Double)\n override fun arc(x: Double, y: Double, radius: Double,
startAngle: Double, endAngle: Double, anticlockwise: Boolean /* = definedExternally */)\n override fun ellipse(x:
Double, y: Double, radiusX: Double, radiusY: Double, rotation: Double, startAngle: Double, endAngle: Double,
anticlockwise: Boolean /* = definedExternally */)\n}\n\n/**\n * Exposes the JavaScript
[ImageBitmapRenderingContext](https://developer.mozilla.org/en/docs/Web/API/ImageBitmapRenderingContext)
to Kotlin\n *\npublic external abstract class ImageBitmapRenderingContext {\n open val canvas:
HTMLCanvasElement\n fun transferFromImageBitmap(bitmap: ImageBitmap?)\n}\n\npublic external interface
ImageBitmapRenderingContextSettings {\n var alpha: Boolean? /* = true *\n get() = definedExternally\n

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set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
ImageBitmapRenderingContextSettings(alpha: Boolean? = true): ImageBitmapRenderingContextSettings {\n  val o
= js(\("{ }\}")\n  o["alpha"] = alpha\n  return o\n}\n\n/**\n * Exposes the JavaScript
[CustomElementRegistry](https://developer.mozilla.org/en/docs/Web/API/CustomElementRegistry) to Kotlin\n
*/\npublic external abstract class CustomElementRegistry {\n  fun define(name: String, constructor: () -> dynamic,
options: ElementDefinitionOptions = definedExternally)\n  fun get(name: String): Any?\n  fun
whenDefined(name: String): Promise<Unit>\n}\n\npublic external interface ElementDefinitionOptions {\n  var
extends: String?\n  get() = definedExternally\n  set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun ElementDefinitionOptions(extends: String?
= undefined): ElementDefinitionOptions {\n  val o = js(\("{ }\}")\n  o["extends"] = extends\n  return
o\n}\n\npublic external interface ElementContentEditable {\n  var contentEditable: String\n  val
isContentEditable: Boolean\n}\n\n/**\n * Exposes the JavaScript
[DataTransfer](https://developer.mozilla.org/en/docs/Web/API/DataTransfer) to Kotlin\n
*/\npublic external
abstract class DataTransfer {\n  open var dropEffect: String\n  open var effectAllowed: String\n  open val items:
DataTransferItemList\n  open val types: Array<out String>\n  open val files: FileList\n  fun
setDragImage(image: Element, x: Int, y: Int)\n  fun getData(format: String): String\n  fun setData(format: String,
data: String)\n  fun clearData(format: String = definedExternally)\n}\n\n/**\n * Exposes the JavaScript
[DataTransferItemList](https://developer.mozilla.org/en/docs/Web/API/DataTransferItemList) to Kotlin\n
*/\npublic external
abstract class DataTransferItemList {\n  open val length: Int\n  fun add(data: String, type: String):
DataTransferItem?\n  fun add(data: File): DataTransferItem?\n  fun remove(index: Int)\n  fun
clear()\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun DataTransferItemList.get(index: Int):
DataTransferItem? = asDynamic()[index]\n\n/**\n * Exposes the JavaScript
[DataTransferItem](https://developer.mozilla.org/en/docs/Web/API/DataTransferItem) to Kotlin\n
*/\npublic
external abstract class DataTransferItem {\n  open val kind: String\n  open val type: String\n  fun
getAsString(_callback: ((String) -> Unit)?)\n  fun getAsFile(): File?\n}\n\n/**\n * Exposes the JavaScript
[DragEvent](https://developer.mozilla.org/en/docs/Web/API/TouchEvent) to Kotlin\n
*/\npublic external open class
TouchEvent(type: String, eventInitDict: TouchEventInit = definedExternally) : MouseEvent {\n  open val
dataTransfer: DataTransfer?\n\n  companion object {\n    val NONE: Short\n    val CAPTURING_PHASE:
Short\n    val AT_TARGET: Short\n    val BUBBLING_PHASE: Short\n  }\n}\n\npublic external interface
TouchEventInit : MouseEventInit {\n  var dataTransfer: DataTransfer? /* = null */\n  get() = definedExternally\n
  set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun TouchEventInit(dataTransfer:
DataTransfer? = null, screenX: Int? = 0, screenY: Int? = 0, clientX: Int? = 0, clientY: Int? = 0, button: Short? = 0,
buttons: Short? = 0, relatedTarget: EventTarget? = null, region: String? = null, ctrlKey: Boolean? = false, shiftKey:
Boolean? = false, altKey: Boolean? = false, metaKey: Boolean? = false, modifierAltGraph: Boolean? = false,
modifierCapsLock: Boolean? = false, modifierFn: Boolean? = false, modifierFnLock: Boolean? = false,
modifierHyper: Boolean? = false, modifierNumLock: Boolean? = false, modifierScrollLock: Boolean? = false,
modifierSuper: Boolean? = false, modifierSymbol: Boolean? = false, modifierSymbolLock: Boolean? = false, view:
Window? = null, detail: Int? = 0, bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? =
false): TouchEventInit {\n  val o = js(\("{ }\}")\n  o["dataTransfer"] = dataTransfer\n  o["screenX"] = screenX\n
  o["screenY"] = screenY\n  o["clientX"] = clientX\n  o["clientY"] = clientY\n  o["button"] = button\n
  o["buttons"] = buttons\n  o["relatedTarget"] = relatedTarget\n  o["region"] = region\n  o["ctrlKey"] =
ctrlKey\n  o["shiftKey"] = shiftKey\n  o["altKey"] = altKey\n  o["metaKey"] = metaKey\n
  o["modifierAltGraph"] = modifierAltGraph\n  o["modifierCapsLock"] = modifierCapsLock\n
  o["modifierFn"] = modifierFn\n  o["modifierFnLock"] = modifierFnLock\n  o["modifierHyper"] =
modifierHyper\n  o["modifierNumLock"] = modifierNumLock\n  o["modifierScrollLock"] =
modifierScrollLock\n  o["modifierSuper"] = modifierSuper\n  o["modifierSymbol"] = modifierSymbol\n
  o["modifierSymbolLock"] = modifierSymbolLock\n  o["view"] = view\n  o["detail"] = detail\n
  o["bubbles"] = bubbles\n  o["cancelable"] = cancelable\n  o["composed"] = composed\n  return
}

```

```

o\n}\n\n/**\n * Exposes the JavaScript [Window](https://developer.mozilla.org/en/docs/Web/API/Window) to
Kotlin\n */\npublic external abstract class Window : EventTarget, GlobalEventHandlers, WindowEventHandlers,
WindowOrWorkerGlobalScope, WindowSessionStorage, WindowLocalStorage, GlobalPerformance,
UnionMessagePortOrWindowProxy {\n    open val window: Window\n    open val self: Window\n    open val
document: Document\n    open var name: String\n    open val location: Location\n    open val history: History\n
open val customElements: CustomElementRegistry\n    open val locationbar: BarProp\n    open val menubar:
BarProp\n    open val personalbar: BarProp\n    open val scrollbars: BarProp\n    open val statusbar: BarProp\n
open val toolbar: BarProp\n    open var status: String\n    open val closed: Boolean\n    open val frames: Window\n
open val length: Int\n    open val top: Window\n    open var opener: Any?\n    open val parent: Window\n    open val
frameElement: Element?\n    open val navigator: Navigator\n    open val applicationCache: ApplicationCache\n
open val external: External\n    open val screen: Screen\n    open val innerWidth: Int\n    open val innerHeight: Int\n
open val scrollX: Double\n    open val pageXOffset: Double\n    open val scrollY: Double\n    open val
pageYOffset: Double\n    open val screenX: Int\n    open val screenY: Int\n    open val outerWidth: Int\n    open val
outerHeight: Int\n    open val devicePixelRatio: Double\n    fun close()\n    fun stop()\n    fun focus()\n    fun blur()\n
fun open(url: String = definedExternally, target: String = definedExternally, features: String = definedExternally):
Window?\n    fun alert()\n    fun alert(message: String)\n    fun confirm(message: String = definedExternally):
Boolean\n    fun prompt(message: String = definedExternally, default: String = definedExternally): String?\n    fun
print()\n    fun requestAnimationFrame(callback: (Double) -> Unit): Int\n    fun cancelAnimationFrame(handle:
Int)\n    fun postMessage(message: Any?, targetOrigin: String, transfer: Array<dynamic> = definedExternally)\n
fun captureEvents()\n    fun releaseEvents()\n    fun matchMedia(query: String): MediaQueryList\n    fun moveTo(x:
Int, y: Int)\n    fun moveBy(x: Int, y: Int)\n    fun resizeTo(x: Int, y: Int)\n    fun resizeBy(x: Int, y: Int)\n    fun
scroll(options: ScrollToOptions = definedExternally)\n    fun scroll(x: Double, y: Double)\n    fun scrollTo(options:
ScrollToOptions = definedExternally)\n    fun scrollTo(x: Double, y: Double)\n    fun scrollBy(options:
ScrollToOptions = definedExternally)\n    fun scrollBy(x: Double, y: Double)\n    fun getComputedStyle(elt:
Element, pseudoElt: String? = definedExternally): CSSStyleDeclaration\n}\n\n@kotlin.internal.InlineOnly\npublic
inline operator fun Window.get(name: String): dynamic = asDynamic()[name]\n\npublic external abstract class
BarProp {\n    open val visible: Boolean\n}\n\n/**\n * Exposes the JavaScript
[History](https://developer.mozilla.org/en/docs/Web/API/History) to Kotlin\n */\npublic external abstract class
History {\n    open val length: Int\n    open var scrollRestoration: ScrollRestoration\n    open val state: Any?\n    fun
go(delta: Int = definedExternally)\n    fun back()\n    fun forward()\n    fun pushState(data: Any?, title: String, url:
String? = definedExternally)\n    fun replaceState(data: Any?, title: String, url: String? =
definedExternally)\n}\n\n/**\n * Exposes the JavaScript
[Location](https://developer.mozilla.org/en/docs/Web/API/Location) to Kotlin\n */\npublic external abstract class
Location {\n    open var href: String\n    open val origin: String\n    open var protocol: String\n    open var host:
String\n    open var hostname: String\n    open var port: String\n    open var pathname: String\n    open var search:
String\n    open var hash: String\n    open val ancestorOrigins: Array<out String>\n    fun assign(url: String)\n    fun
replace(url: String)\n    fun reload()\n}\n\n/**\n * Exposes the JavaScript
[PopStateEvent](https://developer.mozilla.org/en/docs/Web/API/PopStateEvent) to Kotlin\n */\npublic external
open class PopStateEvent(type: String, eventInitDict: PopStateEventInit = definedExternally) : Event {\n    open val
state: Any?\n\n    companion object {\n        val NONE: Short\n        val CAPTURING_PHASE: Short\n        val
AT_TARGET: Short\n        val BUBBLING_PHASE: Short\n    }\n\n    public external interface PopStateEventInit
: EventInit {\n        var state: Any? /* = null */\n        get() = definedExternally\n        set(value) =
definedExternally\n    }\n\n    @kotlin.internal.InlineOnly\n    public inline fun PopStateEventInit(state: Any? = null,
bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? = false): PopStateEventInit {\n        val o
= js("{}")\n        o["state"] = state\n        o["bubbles"] = bubbles\n        o["cancelable"] = cancelable\n
o["composed"] = composed\n        return o\n}\n\n/**\n * Exposes the JavaScript
[HashChangeEvent](https://developer.mozilla.org/en/docs/Web/API/HashChangeEvent) to Kotlin\n */\npublic
external open class HashChangeEvent(type: String, eventInitDict: HashChangeEventInit = definedExternally) :

```

```

Event {
    open val oldURL: String
    open val newURL: String
    companion object {
        val NONE: Short
        val CAPTURING_PHASE: Short
        val AT_TARGET: Short
        val BUBBLING_PHASE: Short
    }
}
public external interface HashChangeEventInit : EventInit {
    var oldURL: String? /* = "" */
    get() = definedExternally
    set(value) = definedExternally
    var newURL: String? /* = "" */
    get() = definedExternally
    set(value) = definedExternally
}
@kotlin.internal.InlineOnly
public inline fun HashChangeEventInit(
    oldURL: String? = "",
    newURL: String? = "",
    bubbles: Boolean? = false,
    cancelable: Boolean? = false,
    composed: Boolean? = false): HashChangeEventInit {
    val o = js("{}")
    o["oldURL"] = oldURL
    o["newURL"] = newURL
    o["bubbles"] = bubbles
    o["cancelable"] = cancelable
    o["composed"] = composed
    return o
}
/**
 * Exposes the JavaScript [PageTransitionEvent](https://developer.mozilla.org/en/docs/Web/API/PageTransitionEvent) to Kotlin
 */
public external open class PageTransitionEvent(
    type: String,
    eventInitDict: PageTransitionEventInit = definedExternally): Event {
    open val persisted: Boolean
    companion object {
        val NONE: Short
        val CAPTURING_PHASE: Short
        val AT_TARGET: Short
        val BUBBLING_PHASE: Short
    }
}
public external interface PageTransitionEventInit : EventInit {
    var persisted: Boolean? /* = false */
    get() = definedExternally
    set(value) = definedExternally
}
@kotlin.internal.InlineOnly
public inline fun PageTransitionEventInit(
    persisted: Boolean? = false,
    bubbles: Boolean? = false,
    cancelable: Boolean? = false,
    composed: Boolean? = false): PageTransitionEventInit {
    val o = js("{}")
    o["persisted"] = persisted
    o["bubbles"] = bubbles
    o["cancelable"] = cancelable
    o["composed"] = composed
    return o
}
/**
 * Exposes the JavaScript [BeforeUnloadEvent](https://developer.mozilla.org/en/docs/Web/API/BeforeUnloadEvent) to Kotlin
 */
public external open class BeforeUnloadEvent : Event {
    var returnValue: String
    companion object {
        val NONE: Short
        val CAPTURING_PHASE: Short
        val AT_TARGET: Short
        val BUBBLING_PHASE: Short
    }
}
public external abstract class ApplicationCache : EventTarget {
    open val status: Short
    open var onchecking: ((Event) -> dynamic)?
    open var onerror: ((Event) -> dynamic)?
    open var onnoupdate: ((Event) -> dynamic)?
    open var ondownloading: ((Event) -> dynamic)?
    open var onprogress: ((ProgressEvent) -> dynamic)?
    open var onunupdateready: ((Event) -> dynamic)?
    open var oncached: ((Event) -> dynamic)?
    open var onobsolete: ((Event) -> dynamic)?
    fun update()
    fun abort()
    fun swapCache()
    companion object {
        val UNCACHED: Short
        val IDLE: Short
        val CHECKING: Short
        val DOWNLOADING: Short
        val UPDATEREADY: Short
        val OBSOLETE: Short
    }
}
/**
 * Exposes the JavaScript [NavigatorOnLine](https://developer.mozilla.org/en/docs/Web/API/NavigatorOnLine) to Kotlin
 */
public external interface NavigatorOnLine {
    val onLine: Boolean
}
/**
 * Exposes the JavaScript [ErrorEvent](https://developer.mozilla.org/en/docs/Web/API/ErrorEvent) to Kotlin
 */
public external open class ErrorEvent(
    type: String,
    eventInitDict: ErrorEventInit = definedExternally): Event {
    open val message: String
    open val filename: String
    open val lineno: Int
    open val colno: Int
    open val error: Any?
    companion object {
        val NONE: Short
        val CAPTURING_PHASE: Short
        val AT_TARGET: Short
        val BUBBLING_PHASE: Short
    }
}
public external interface ErrorEventInit : EventInit {
    var message: String? /* = "" */
    get() = definedExternally
    set(value) = definedExternally
    var filename: String? /* = "" */
    get() = definedExternally
    set(value) = definedExternally
    var lineno: Int? /* = 0 */
    get() = definedExternally
    set(value) = definedExternally
    var colno: Int? /* = 0 */
    get() = definedExternally
    set(value) = definedExternally
    var error: Any? /* = null */
    get() = definedExternally
    set(value) = definedExternally
}
@kotlin.internal.InlineOnly
public inline fun ErrorEventInit(
    message: String? = "",
    filename: String? = "",
    lineno: Int? = 0,
    colno: Int? = 0,
    error: Any? = null,
    bubbles: Boolean? = false,
    cancelable: Boolean? = false,
    composed: Boolean? = false): ErrorEventInit {
    val o = js("{}")
    o["message"] = message
    o["filename"] = filename
    o["lineno"] = lineno
    o["colno"] = colno
    o["error"] = error
    o["bubbles"] = bubbles
    o["cancelable"] = cancelable
    o["composed"] = composed
    return o
}
/**
 * Exposes the JavaScript [PromiseRejectionEvent](https://developer.mozilla.org/en/docs/Web/API/PromiseRejectionEvent) to Kotlin
 */

```



```

*\npublic external open class PromiseRejectionEvent(type: String, eventInitDict: PromiseRejectionEventInit) :
Event {\n  open val promise: Promise<Any?>\n  open val reason: Any?\n\n  companion object {\n    val
NONE: Short\n    val CAPTURING_PHASE: Short\n    val AT_TARGET: Short\n    val
BUBBLING_PHASE: Short\n  }\n\npublic external interface PromiseRejectionEventInit : EventInit {\n  var
promise: Promise<Any?>?\n  get() = definedExternally\n  set(value) = definedExternally\n  var reason:
Any?\n  get() = definedExternally\n  set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun PromiseRejectionEventInit(promise:
Promise<Any?>?, reason: Any? = undefined, bubbles: Boolean? = false, cancelable: Boolean? = false, composed:
Boolean? = false): PromiseRejectionEventInit {\n  val o = js("\{ }\")\n  o["promise"] = promise\n
o["reason"] = reason\n  o["bubbles"] = bubbles\n  o["cancelable"] = cancelable\n  o["composed"] =
composed\n  return o\n}\n\n/**\n * Exposes the JavaScript
[GlobalEventHandlers](https://developer.mozilla.org/en/docs/Web/API/GlobalEventHandlers) to Kotlin\n
*\npublic external interface GlobalEventHandlers {\n  var onabort: ((Event) -> dynamic)?\n  get() =
definedExternally\n  set(value) = definedExternally\n  var onblur: ((FocusEvent) -> dynamic)?\n  get() =
definedExternally\n  set(value) = definedExternally\n  var oncancel: ((Event) -> dynamic)?\n  get() =
definedExternally\n  set(value) = definedExternally\n  var oncanplay: ((Event) -> dynamic)?\n  get() =
definedExternally\n  set(value) = definedExternally\n  var oncanplaythrough: ((Event) -> dynamic)?\n  get()
= definedExternally\n  set(value) = definedExternally\n  var onchange: ((Event) -> dynamic)?\n  get() =
definedExternally\n  set(value) = definedExternally\n  var onclick: ((MouseEvent) -> dynamic)?\n  get() =
definedExternally\n  set(value) = definedExternally\n  var onclose: ((Event) -> dynamic)?\n  get() =
definedExternally\n  set(value) = definedExternally\n  var oncontextmenu: ((MouseEvent) -> dynamic)?\n
get() = definedExternally\n  set(value) = definedExternally\n  var oncuechange: ((Event) -> dynamic)?\n
get() = definedExternally\n  set(value) = definedExternally\n  var ondblclick: ((MouseEvent) -> dynamic)?\n
get() = definedExternally\n  set(value) = definedExternally\n  var ondrag: ((DragEvent) -> dynamic)?\n
get() = definedExternally\n  set(value) = definedExternally\n  var ondragend: ((DragEvent) -> dynamic)?\n
get() = definedExternally\n  set(value) = definedExternally\n  var ondragenter: ((DragEvent) -> dynamic)?\n
get() = definedExternally\n  set(value) = definedExternally\n  var ondragexit: ((DragEvent) -> dynamic)?\n
get() = definedExternally\n  set(value) = definedExternally\n  var ondragleave: ((DragEvent) -> dynamic)?\n
get() = definedExternally\n  set(value) = definedExternally\n  var ondragover: ((DragEvent) -> dynamic)?\n
get() = definedExternally\n  set(value) = definedExternally\n  var ondragstart: ((DragEvent) -> dynamic)?\n
get() = definedExternally\n  set(value) = definedExternally\n  var ondrop: ((DragEvent) -> dynamic)?\n
get() = definedExternally\n  set(value) = definedExternally\n  var ondurationchange: ((Event) -> dynamic)?\n
get() = definedExternally\n  set(value) = definedExternally\n  var onemptied: ((Event) -> dynamic)?\n
get() = definedExternally\n  set(value) = definedExternally\n  var onended: ((Event) -> dynamic)?\n  get() =
definedExternally\n  set(value) = definedExternally\n  var onerror: ((dynamic, String, Int, Int, Any?) ->
dynamic)?\n  get() = definedExternally\n  set(value) = definedExternally\n  var onfocus: ((FocusEvent) ->
dynamic)?\n  get() = definedExternally\n  set(value) = definedExternally\n  var oninput: ((InputEvent) ->
dynamic)?\n  get() = definedExternally\n  set(value) = definedExternally\n  var oninvalid: ((Event) ->
dynamic)?\n  get() = definedExternally\n  set(value) = definedExternally\n  var onkeydown:
((KeyboardEvent) -> dynamic)?\n  get() = definedExternally\n  set(value) = definedExternally\n  var
onkeypress: ((KeyboardEvent) -> dynamic)?\n  get() = definedExternally\n  set(value) = definedExternally\n
var onkeyup: ((KeyboardEvent) -> dynamic)?\n  get() = definedExternally\n  set(value) =
definedExternally\n  var onload: ((Event) -> dynamic)?\n  get() = definedExternally\n  set(value) =
definedExternally\n  var onloadeddata: ((Event) -> dynamic)?\n  get() = definedExternally\n  set(value) =
definedExternally\n  var onloadedmetadata: ((Event) -> dynamic)?\n  get() = definedExternally\n
set(value) = definedExternally\n  var onloadend: ((Event) -> dynamic)?\n  get() = definedExternally\n
set(value) = definedExternally\n  var onloadstart: ((ProgressEvent) -> dynamic)?\n  get() = definedExternally\n
set(value) = definedExternally\n  var onmousedown: ((MouseEvent) -> dynamic)?\n  get() =

```

```

definedExternally\n    set(value) = definedExternally\n    var onmouseenter: ((MouseEvent) -> dynamic)?\n
get() = definedExternally\n    set(value) = definedExternally\n    var onmouseleave: ((MouseEvent) ->
dynamic)?\n    get() = definedExternally\n    set(value) = definedExternally\n    var onmousemove:
((MouseEvent) -> dynamic)?\n    get() = definedExternally\n    set(value) = definedExternally\n    var
onmouseout: ((MouseEvent) -> dynamic)?\n    get() = definedExternally\n    set(value) = definedExternally\n
var onmouseover: ((MouseEvent) -> dynamic)?\n    get() = definedExternally\n    set(value) =
definedExternally\n    var onmouseup: ((MouseEvent) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onwheel: ((WheelEvent) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onpause: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onplay: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onplaying: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onprogress: ((ProgressEvent) -> dynamic)?\n    get() = definedExternally\n
    set(value) = definedExternally\n    var onratechange: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onreset: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onresize: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onscroll: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onseeked: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onseeking: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onselect: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onshow: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onstalled: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onsubmit: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onsuspend: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var ontimeupdate: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var ontoggle: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onvolumechange: ((Event) -> dynamic)?\n    get() = definedExternally\n
    set(value) = definedExternally\n    var onwaiting: ((Event) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var ongotpointercapture: ((PointerEvent) -> dynamic)?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var onlostpointercapture: ((PointerEvent) -> dynamic)?\n
    get() = definedExternally\n    set(value) = definedExternally\n    var onpointerdown: ((PointerEvent) ->
dynamic)?\n    get() = definedExternally\n    set(value) = definedExternally\n    var onpointermove:
((PointerEvent) -> dynamic)?\n    get() = definedExternally\n    set(value) = definedExternally\n    var
onpointerup: ((PointerEvent) -> dynamic)?\n    get() = definedExternally\n    set(value) = definedExternally\n
var onpointercancel: ((PointerEvent) -> dynamic)?\n    get() = definedExternally\n    set(value) =
definedExternally\n    var onpointerover: ((PointerEvent) -> dynamic)?\n    get() = definedExternally\n
set(value) = definedExternally\n    var onpointerout: ((PointerEvent) -> dynamic)?\n    get() = definedExternally\n
    set(value) = definedExternally\n    var onpointerenter: ((PointerEvent) -> dynamic)?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var onpointerleave: ((PointerEvent) -> dynamic)?\n
get() = definedExternally\n    set(value) = definedExternally\n}\n\n**\n * Exposes the JavaScript
[WindowEventHandlers](https://developer.mozilla.org/en/docs/Web/API/WindowEventHandlers) to Kotlin\n
*\npublic external interface WindowEventHandlers {\n    var onafterprint: ((Event) -> dynamic)?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var onbeforeprint: ((Event) -> dynamic)?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var onbeforeunload: ((BeforeUnloadEvent) ->
String)?\n    get() = definedExternally\n    set(value) = definedExternally\n    var onhashchange:
((HashChangeEvent) -> dynamic)?\n    get() = definedExternally\n    set(value) = definedExternally\n    var
onlanguagechange: ((Event) -> dynamic)?\n    get() = definedExternally\n    set(value) = definedExternally\n
var onmessage: ((MessageEvent) -> dynamic)?\n    get() = definedExternally\n    set(value) =
definedExternally\n    var onoffline: ((Event) -> dynamic)?\n    get() = definedExternally\n    set(value) =

```

```

definedExternally\n    var ononline: ((Event) -> dynamic)?\n        get() = definedExternally\n        set(value) =
definedExternally\n    var onpagehide: ((PageTransitionEvent) -> dynamic)?\n        get() = definedExternally\n
set(value) = definedExternally\n    var onpageshow: ((PageTransitionEvent) -> dynamic)?\n        get() =
definedExternally\n        set(value) = definedExternally\n    var onpopstate: ((PopStateEvent) -> dynamic)?\n
get() = definedExternally\n        set(value) = definedExternally\n    var onrejectionhandled: ((Event) -> dynamic)?\n
        get() = definedExternally\n        set(value) = definedExternally\n    var onstorage: ((StorageEvent) -> dynamic)?\n
        get() = definedExternally\n        set(value) = definedExternally\n    var onunhandledrejection:
((PromiseRejectionEvent) -> dynamic)?\n        get() = definedExternally\n        set(value) = definedExternally\n
var onunload: ((Event) -> dynamic)?\n        get() = definedExternally\n        set(value) =
definedExternally\n}\n\npublic external interface DocumentAndElementEventHandlers {\n    var oncopy:
((ClipboardEvent) -> dynamic)?\n        get() = definedExternally\n        set(value) = definedExternally\n    var oncut:
((ClipboardEvent) -> dynamic)?\n        get() = definedExternally\n        set(value) = definedExternally\n    var
onpaste: ((ClipboardEvent) -> dynamic)?\n        get() = definedExternally\n        set(value) =
definedExternally\n}\n\n/**\n * Exposes the JavaScript
[WindowOrWorkerGlobalScope](https://developer.mozilla.org/en/docs/Web/API/WindowOrWorkerGlobalScope)
to Kotlin\n */\n\npublic external interface WindowOrWorkerGlobalScope {\n    val origin: String\n    val caches:
CacheStorage\n    fun btoa(data: String): String\n    fun atob(data: String): String\n    fun setTimeout(handler:
dynamic, timeout: Int = definedExternally, vararg arguments: Any?): Int\n    fun clearTimeout(handle: Int =
definedExternally)\n    fun setInterval(handler: dynamic, timeout: Int = definedExternally, vararg arguments: Any?):
Int\n    fun clearInterval(handle: Int = definedExternally)\n    fun createImageBitmap(image: ImageBitmapSource,
options: ImageBitmapOptions = definedExternally): Promise<ImageBitmap>\n    fun createImageBitmap(image:
ImageBitmapSource, sx: Int, sy: Int, sw: Int, sh: Int, options: ImageBitmapOptions = definedExternally):
Promise<ImageBitmap>\n    fun fetch(input: dynamic, init: RequestInit = definedExternally):
Promise<Response>\n}\n\n/**\n * Exposes the JavaScript
[Navigator](https://developer.mozilla.org/en/docs/Web/API/Navigator) to Kotlin\n */\n\npublic external abstract class
Navigator : NavigatorID, NavigatorLanguage, NavigatorOnLine, NavigatorContentUtils, NavigatorCookies,
NavigatorPlugins, NavigatorConcurrentHardware {\n    open val clipboard: Clipboard\n    open val mediaDevices:
MediaDevices\n    open val maxTouchPoints: Int\n    open val serviceWorker: ServiceWorkerContainer\n    fun
getUserMedia(constraints: MediaStreamConstraints, successCallback: (MediaStream) -> Unit, errorCallback:
(dynamic) -> Unit)\n    fun vibrate(pattern: dynamic): Boolean\n}\n\n/**\n * Exposes the JavaScript
[NavigatorID](https://developer.mozilla.org/en/docs/Web/API/NavigatorID) to Kotlin\n */\n\npublic external interface
NavigatorID {\n    val appCodeName: String\n    val appName: String\n    val appVersion: String\n    val platform:
String\n    val product: String\n    val productSub: String\n    val userAgent: String\n    val vendor: String\n    val
vendorSub: String\n    val oscpu: String\n    fun taintEnabled(): Boolean\n}\n\n/**\n * Exposes the JavaScript
[NavigatorLanguage](https://developer.mozilla.org/en/docs/Web/API/NavigatorLanguage) to Kotlin\n */\n\npublic
external interface NavigatorLanguage {\n    val language: String\n    val languages: Array<out String>\n}\n\npublic
external interface NavigatorContentUtils {\n    fun registerProtocolHandler(scheme: String, url: String, title:
String)\n    fun registerContentHandler(mimeType: String, url: String, title: String)\n    fun
isProtocolHandlerRegistered(scheme: String, url: String): String\n    fun isContentHandlerRegistered(mimeType:
String, url: String): String\n    fun unregisterProtocolHandler(scheme: String, url: String)\n    fun
unregisterContentHandler(mimeType: String, url: String)\n}\n\npublic external interface NavigatorCookies {\n    val
cookieEnabled: Boolean\n}\n\n/**\n * Exposes the JavaScript
[NavigatorPlugins](https://developer.mozilla.org/en/docs/Web/API/NavigatorPlugins) to Kotlin\n */\n\npublic
external interface NavigatorPlugins {\n    val plugins: PluginArray\n    val mimeTypes: MimeTypeError\n    fun
javaEnabled(): Boolean\n}\n\n/**\n * Exposes the JavaScript
[PluginArray](https://developer.mozilla.org/en/docs/Web/API/PluginArray) to Kotlin\n */\n\npublic external abstract
class PluginArray : ItemArrayLike<Plugin> {\n    fun refresh(reload: Boolean = definedExternally)\n    override fun
item(index: Int): Plugin?\n    fun namedItem(name: String): Plugin?\n}\n\n@kotlin.internal.InlineOnly\npublic

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inline operator fun PluginArray.get(index: Int): Plugin? =
asDynamic()[index]\n\n@kotlin.internal.InlineOnly\npublic inline operator fun PluginArray.get(name: String):
Plugin? = asDynamic()[name]\n\n/**\n * Exposes the JavaScript
[MimeTypeArray](https://developer.mozilla.org/en/docs/Web/API/MimeTypeArray) to Kotlin\n *\npublic external
abstract class MimeTypeArray : ItemArrayLike<MimeType> {\n  override fun item(index: Int): MimeType?\n
fun namedItem(name: String): MimeType?\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun
MimeTypeArray.get(index: Int): MimeType? = asDynamic()[index]\n\n@kotlin.internal.InlineOnly\npublic inline
operator fun MimeTypeArray.get(name: String): MimeType? = asDynamic()[name]\n\n/**\n * Exposes the
JavaScript [Plugin](https://developer.mozilla.org/en/docs/Web/API/Plugin) to Kotlin\n *\npublic external abstract
class Plugin : ItemArrayLike<MimeType> {\n  open val name: String\n  open val description: String\n  open val
filename: String\n  override fun item(index: Int): MimeType?\n  fun namedItem(name: String):
MimeType?\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun Plugin.get(index: Int): MimeType? =
asDynamic()[index]\n\n@kotlin.internal.InlineOnly\npublic inline operator fun Plugin.get(name: String):
MimeType? = asDynamic()[name]\n\n/**\n * Exposes the JavaScript
[MimeType](https://developer.mozilla.org/en/docs/Web/API/MimeType) to Kotlin\n *\npublic external abstract
class MimeType {\n  open val type: String\n  open val description: String\n  open val suffixes: String\n  open
val enabledPlugin: Plugin\n}\n\n/**\n * Exposes the JavaScript
[ImageBitmap](https://developer.mozilla.org/en/docs/Web/API/ImageBitmap) to Kotlin\n *\npublic external
abstract class ImageBitmap : CanvasImageSource, TexImageSource {\n  open val width: Int\n  open val height:
Int\n  fun close()\n}\n\npublic external interface ImageBitmapOptions {\n  var imageOrientation:
ImageOrientation? /* = ImageOrientation.NONE */\n  get() = definedExternally\n  set(value) =
definedExternally\n  var premultiplyAlpha: PremultiplyAlpha? /* = PremultiplyAlpha.DEFAULT */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var colorSpaceConversion: ColorSpaceConversion? /* =
ColorSpaceConversion.DEFAULT */\n  get() = definedExternally\n  set(value) = definedExternally\n  var
resizeWidth: Int?\n  get() = definedExternally\n  set(value) = definedExternally\n  var resizeHeight: Int?\n
get() = definedExternally\n  set(value) = definedExternally\n  var resizeQuality: ResizeQuality? /* =
ResizeQuality.LOW */\n  get() = definedExternally\n  set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun ImageBitmapOptions(imageOrientation:
ImageOrientation? = ImageOrientation.NONE, premultiplyAlpha: PremultiplyAlpha? =
PremultiplyAlpha.DEFAULT, colorSpaceConversion: ColorSpaceConversion? =
ColorSpaceConversion.DEFAULT, resizeWidth: Int? = undefined, resizeHeight: Int? = undefined, resizeQuality:
ResizeQuality? = ResizeQuality.LOW): ImageBitmapOptions {\n  val o = js("{}")\n  o["imageOrientation"]
= imageOrientation\n  o["premultiplyAlpha"] = premultiplyAlpha\n  o["colorSpaceConversion"] =
colorSpaceConversion\n  o["resizeWidth"] = resizeWidth\n  o["resizeHeight"] = resizeHeight\n
o["resizeQuality"] = resizeQuality\n  return o\n}\n\n/**\n * Exposes the JavaScript
[MessageEvent](https://developer.mozilla.org/en/docs/Web/API/MessageEvent) to Kotlin\n *\npublic external open
class MessageEvent(type: String, eventInitDict: MessageEventInit = definedExternally) : Event {\n  open val data:
Any?\n  open val origin: String\n  open val lastEventId: String\n  open val source:
UnionMessagePortOrWindowProxy?\n  open val ports: Array<out MessagePort>\n  fun initMessageEvent(type:
String, bubbles: Boolean, cancelable: Boolean, data: Any?, origin: String, lastEventId: String, source:
UnionMessagePortOrWindowProxy?, ports: Array<MessagePort>)\n\n  companion object {\n    val NONE:
Short\n    val CAPTURING_PHASE: Short\n    val AT_TARGET: Short\n    val BUBBLING_PHASE:
Short\n  }\n}\n\npublic external interface MessageEventInit : EventInit {\n  var data: Any? /* = null */\n  get()
= definedExternally\n  set(value) = definedExternally\n  var origin: String? /* = \"\" */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var lastEventId: String? /* = \"\" */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var source: UnionMessagePortOrWindowProxy? /* =
null */\n  get() = definedExternally\n  set(value) = definedExternally\n  var ports: Array<MessagePort>? /*
= arrayOf() */\n  get() = definedExternally\n  set(value) =

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definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun MessageEventInit(data: Any? = null, origin:
String? = \"\", lastEventId: String? = \"\", source: UnionMessagePortOrWindowProxy? = null, ports:
Array<MessagePort>? = arrayOf(), bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? =
false): MessageEventInit {\n  val o = js(\"({})\")\n  o[\"data\"] = data\n  o[\"origin\"] = origin\n  o[\"lastEventId\"] = lastEventId\n  o[\"source\"] = source\n  o[\"ports\"] = ports\n  o[\"bubbles\"] = bubbles\n  o[\"cancelable\"] = cancelable\n  o[\"composed\"] = composed\n  return o\n}\n\n/**\n * Exposes the JavaScript
[EventSource](https://developer.mozilla.org/en/docs/Web/API/EventSource) to Kotlin\n */\npublic external open
class EventSource(url: String, eventSourceInitDict: EventSourceInit = definedExternally) : EventTarget {\n  open
val url: String\n  open val withCredentials: Boolean\n  open val readyState: Short\n  var onopen: ((Event) ->
dynamic)?\n  var onmessage: ((MessageEvent) -> dynamic)?\n  var onerror: ((Event) -> dynamic)?\n  fun
close()\n\n  companion object {\n    val CONNECTING: Short\n    val OPEN: Short\n    val CLOSED:
Short\n  }\n}\n\npublic external interface EventSourceInit {\n  var withCredentials: Boolean? /* = false */\n
get() = definedExternally\n  set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
EventSourceInit(withCredentials: Boolean? = false): EventSourceInit {\n  val o = js(\"({})\")\n
o[\"withCredentials\"] = withCredentials\n  return o\n}\n\n/**\n * Exposes the JavaScript
[WebSocket](https://developer.mozilla.org/en/docs/Web/API/WebSocket) to Kotlin\n */\npublic external open class
WebSocket(url: String, protocols: dynamic = definedExternally) : EventTarget {\n  open val url: String\n  open
val readyState: Short\n  open val bufferedAmount: Number\n  var onopen: ((Event) -> dynamic)?\n  var onerror:
((Event) -> dynamic)?\n  var onclose: ((Event) -> dynamic)?\n  open val extensions: String\n  open val protocol:
String\n  var onmessage: ((MessageEvent) -> dynamic)?\n  var binaryType: BinaryType\n  fun close(code: Short
= definedExternally, reason: String = definedExternally)\n  fun send(data: String)\n  fun send(data: Blob)\n  fun
send(data: ArrayBuffer)\n  fun send(data: ArrayBufferView)\n\n  companion object {\n    val CONNECTING:
Short\n    val OPEN: Short\n    val CLOSING: Short\n    val CLOSED: Short\n  }\n}\n\n/**\n * Exposes the
JavaScript [CloseEvent](https://developer.mozilla.org/en/docs/Web/API/CloseEvent) to Kotlin\n */\npublic external
open class CloseEvent(type: String, eventInitDict: CloseEventInit = definedExternally) : Event {\n  open val
wasClean: Boolean\n  open val code: Short\n  open val reason: String\n\n  companion object {\n    val NONE:
Short\n    val CAPTURING_PHASE: Short\n    val AT_TARGET: Short\n    val BUBBLING_PHASE:
Short\n  }\n}\n\npublic external interface CloseEventInit : EventInit {\n  var wasClean: Boolean? /* = false */\n
get() = definedExternally\n  set(value) = definedExternally\n  var code: Short? /* = 0 */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var reason: String? /* = \"\" */\n  get() =
definedExternally\n  set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
CloseEventInit(wasClean: Boolean? = false, code: Short? = 0, reason: String? = \"\", bubbles: Boolean? = false,
cancelable: Boolean? = false, composed: Boolean? = false): CloseEventInit {\n  val o = js(\"({})\")\n
o[\"wasClean\"] = wasClean\n  o[\"code\"] = code\n  o[\"reason\"] = reason\n  o[\"bubbles\"] = bubbles\n
o[\"cancelable\"] = cancelable\n  o[\"composed\"] = composed\n  return o\n}\n\n/**\n * Exposes the JavaScript
[MessageChannel](https://developer.mozilla.org/en/docs/Web/API/MessageChannel) to Kotlin\n */\npublic external
open class MessageChannel {\n  open val port1: MessagePort\n  open val port2: MessagePort\n}\n\n/**\n *
Exposes the JavaScript [MessagePort](https://developer.mozilla.org/en/docs/Web/API/MessagePort) to Kotlin\n
*/\npublic external abstract class MessagePort : EventTarget, UnionMessagePortOrWindowProxy,
UnionMessagePortOrServiceWorker, UnionClientOrMessagePortOrServiceWorker {\n  open var onmessage:
((MessageEvent) -> dynamic)?\n  fun postMessage(message: Any?, transfer: Array<dynamic> =
definedExternally)\n  fun start()\n  fun close()\n}\n\n/**\n * Exposes the JavaScript
[BroadcastChannel](https://developer.mozilla.org/en/docs/Web/API/BroadcastChannel) to Kotlin\n */\npublic
external open class BroadcastChannel(name: String) : EventTarget {\n  open val name: String\n  var onmessage:
((MessageEvent) -> dynamic)?\n  fun postMessage(message: Any?)\n  fun close()\n}\n\n/**\n * Exposes the
JavaScript [WorkerGlobalScope](https://developer.mozilla.org/en/docs/Web/API/WorkerGlobalScope) to Kotlin\n
*/\npublic external abstract class WorkerGlobalScope : EventTarget, WindowOrWorkerGlobalScope,
GlobalPerformance {\n  open val self: WorkerGlobalScope\n  open val location: WorkerLocation\n  open val

```

navigator: WorkerNavigator\n open var onerror: ((dynamic, String, Int, Int, Any?) -> dynamic)?\n open var onlanguagechange: ((Event) -> dynamic)?\n open var onoffline: ((Event) -> dynamic)?\n open var ononline: ((Event) -> dynamic)?\n open var onrejectionhandled: ((Event) -> dynamic)?\n open var onunhandledrejection: ((PromiseRejectionEvent) -> dynamic)?\n fun importScripts(vararg urls: String)\n}\n\n/\*\*\n \* Exposes the JavaScript

[DedicatedWorkerGlobalScope](https://developer.mozilla.org/en/docs/Web/API/DedicatedWorkerGlobalScope) to Kotlin\n \*\npublic external abstract class DedicatedWorkerGlobalScope : WorkerGlobalScope {\n open var onmessage: ((MessageEvent) -> dynamic)?\n fun postMessage(message: Any?, transfer: Array<dynamic> = definedExternally)\n fun close()\n}\n\n/\*\*\n \* Exposes the JavaScript

[SharedWorkerGlobalScope](https://developer.mozilla.org/en/docs/Web/API/SharedWorkerGlobalScope) to Kotlin\n \*\npublic external abstract class SharedWorkerGlobalScope : WorkerGlobalScope {\n open val name: String\n open val applicationCache: ApplicationCache\n open var onconnect: ((Event) -> dynamic)?\n fun close()\n}\n\n/\*\*\n \* Exposes the JavaScript

[AbstractWorker](https://developer.mozilla.org/en/docs/Web/API/AbstractWorker) to Kotlin\n \*\npublic external interface AbstractWorker {\n var onerror: ((Event) -> dynamic)?\n get() = definedExternally\n set(value) = definedExternally\n}\n\n/\*\*\n \* Exposes the JavaScript

[Worker](https://developer.mozilla.org/en/docs/Web/API/Worker) to Kotlin\n \*\npublic external open class Worker(scriptURL: String, options: WorkerOptions = definedExternally) : EventTarget, AbstractWorker {\n var onmessage: ((MessageEvent) -> dynamic)?\n override var onerror: ((Event) -> dynamic)?\n fun terminate()\n fun postMessage(message: Any?, transfer: Array<dynamic> = definedExternally)\n}\n\npublic external interface WorkerOptions {\n var type: WorkerType? /\* = WorkerType.CLASSIC \*/\n get() = definedExternally\n set(value) = definedExternally\n var credentials: RequestCredentials? /\* = RequestCredentials.OMIT \*/\n get() = definedExternally\n set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun WorkerOptions(type: WorkerType? = WorkerType.CLASSIC, credentials: RequestCredentials? = RequestCredentials.OMIT): WorkerOptions {\n val o = js("{}")\n o["type"] = type\n o["credentials"] = credentials\n return o\n}\n\n/\*\*\n \* Exposes the JavaScript

[SharedWorker](https://developer.mozilla.org/en/docs/Web/API/SharedWorker) to Kotlin\n \*\npublic external open class SharedWorker(scriptURL: String, name: String = definedExternally, options: WorkerOptions = definedExternally) : EventTarget, AbstractWorker {\n open val port: MessagePort\n override var onerror: ((Event) -> dynamic)?\n}\n\n/\*\*\n \* Exposes the JavaScript

[NavigatorConcurrentHardware](https://developer.mozilla.org/en/docs/Web/API/NavigatorConcurrentHardware) to Kotlin\n \*\npublic external interface NavigatorConcurrentHardware {\n val hardwareConcurrency: Number\n}\n\n/\*\*\n \* Exposes the JavaScript

[WorkerNavigator](https://developer.mozilla.org/en/docs/Web/API/WorkerNavigator) to Kotlin\n \*\npublic external abstract class WorkerNavigator : NavigatorID, NavigatorLanguage, NavigatorOnLine, NavigatorConcurrentHardware {\n open val serviceWorker: ServiceWorkerContainer\n}\n\n/\*\*\n \* Exposes the JavaScript

[WorkerLocation](https://developer.mozilla.org/en/docs/Web/API/WorkerLocation) to Kotlin\n \*\npublic external abstract class WorkerLocation {\n open val href: String\n open val origin: String\n open val protocol: String\n open val host: String\n open val hostname: String\n open val port: String\n open val pathname: String\n open val search: String\n open val hash: String\n}\n\n/\*\*\n \* Exposes the JavaScript

[Storage](https://developer.mozilla.org/en/docs/Web/API/Storage) to Kotlin\n \*\npublic external abstract class Storage {\n open val length: Int\n fun key(index: Int): String?\n fun removeItem(key: String)\n fun clear()\n fun getItem(key: String): String?\n fun setItem(key: String, value: String)\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun Storage.get(key: String): String? = asDynamic()[key]\n\n@kotlin.internal.InlineOnly\npublic inline operator fun Storage.set(key: String, value: String) { asDynamic()[key] = value }\n\n/\*\*\n \* Exposes the JavaScript

[WindowSessionStorage](https://developer.mozilla.org/en/docs/Web/API/WindowSessionStorage) to Kotlin\n \*\npublic external interface WindowSessionStorage {\n val sessionStorage: Storage\n}\n\n/\*\*\n \* Exposes the

JavaScript [WindowLocalStorage](https://developer.mozilla.org/en/docs/Web/API/WindowLocalStorage) to Kotlin

```

public external interface WindowLocalStorage {
    val localStorage: Storage
}

Exposes the JavaScript [StorageEvent](https://developer.mozilla.org/en/docs/Web/API/StorageEvent) to Kotlin

public external open class StorageEvent(type: String, eventInitDict: StorageEventInit = definedExternally) : Event {
    open val key: String?
    open val oldValue: String?
    open val newValue: String?
    open val url: String
    open val storageArea: Storage?

    companion object {
        val NONE: Short
        val CAPTURING_PHASE: Short
        val AT_TARGET: Short
        val BUBBLING_PHASE: Short
    }
}

public external interface StorageEventInit : EventInit {
    var key: String? /* = null */
    get() = definedExternally
    set(value) = definedExternally
    var oldValue: String? /* = null */
    get() = definedExternally
    set(value) = definedExternally
    var newValue: String? /* = null */
    get() = definedExternally
    set(value) = definedExternally
    var url: String? /* = "" */
    get() = definedExternally
    set(value) = definedExternally
    var storageArea: Storage? /* = null */
    get() = definedExternally
    set(value) = definedExternally
}

@kotlin.internal.InlineOnly
public inline fun StorageEventInit(key: String? = null, oldValue: String? = null, newValue: String? = null, url: String? = "", storageArea: Storage? = null, bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? = false): StorageEventInit {
    val o = js("{}")
    o["key"] = key
    o["oldValue"] = oldValue
    o["newValue"] = newValue
    o["url"] = url
    o["storageArea"] = storageArea
    o["bubbles"] = bubbles
    o["cancelable"] = cancelable
    o["composed"] = composed
    return o
}

public external abstract class HTMLAppletElement : HTMLElement {
    open var align: String
    open var alt: String
    open var archive: String
    open var code: String
    open var codeBase: String
    open var height: String
    open var hspace: Int
    open var name: String
    open var _object: String
    open var vspace: Int
    open var width: String

    companion object {
        val ELEMENT_NODE: Short
        val ATTRIBUTE_NODE: Short
        val TEXT_NODE: Short
        val CDATA_SECTION_NODE: Short
        val ENTITY_REFERENCE_NODE: Short
        val ENTITY_NODE: Short
        val PROCESSING_INSTRUCTION_NODE: Short
        val COMMENT_NODE: Short
        val DOCUMENT_NODE: Short
        val DOCUMENT_TYPE_NODE: Short
        val DOCUMENT_FRAGMENT_NODE: Short
        val NOTATION_NODE: Short
        val DOCUMENT_POSITION_DISCONNECTED: Short
        val DOCUMENT_POSITION_PRECEDING: Short
        val DOCUMENT_POSITION_FOLLOWING: Short
        val DOCUMENT_POSITION_CONTAINS: Short
        val DOCUMENT_POSITION_CONTAINED_BY: Short
        val DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short
    }
}

Exposes the JavaScript [HTMLMarqueeElement](https://developer.mozilla.org/en/docs/Web/API/HTMLMarqueeElement) to Kotlin

public external abstract class HTMLMarqueeElement : HTMLElement {
    open var behavior: String
    open var bgColor: String
    open var direction: String
    open var height: String
    open var hspace: Int
    open var loop: Int
    open var scrollAmount: Int
    open var scrollDelay: Int
    open var trueSpeed: Boolean
    open var vspace: Int
    open var width: String
    open var onbounce: ((Event) -> dynamic)?
    open var onfinish: ((Event) -> dynamic)?
    open var onstart: ((Event) -> dynamic)?
    fun start()
    fun stop()

    companion object {
        val ELEMENT_NODE: Short
        val ATTRIBUTE_NODE: Short
        val TEXT_NODE: Short
        val CDATA_SECTION_NODE: Short
        val ENTITY_REFERENCE_NODE: Short
        val ENTITY_NODE: Short
        val PROCESSING_INSTRUCTION_NODE: Short
        val COMMENT_NODE: Short
        val DOCUMENT_NODE: Short
        val DOCUMENT_TYPE_NODE: Short
        val DOCUMENT_FRAGMENT_NODE: Short
        val NOTATION_NODE: Short
        val DOCUMENT_POSITION_DISCONNECTED: Short
        val DOCUMENT_POSITION_PRECEDING: Short
        val DOCUMENT_POSITION_FOLLOWING: Short
        val DOCUMENT_POSITION_CONTAINS: Short
        val DOCUMENT_POSITION_CONTAINED_BY: Short
        val DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short
    }
}

Exposes the JavaScript [HTMLFrameSetElement](https://developer.mozilla.org/en/docs/Web/API/HTMLFrameSetElement) to Kotlin

public external abstract class HTMLFrameSetElement : HTMLElement, WindowEventHandlers {
    open var cols: String
    open var rows: String

    companion object {
        val ELEMENT_NODE: Short
        val
    }
}

```

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ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val
ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val
PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\npublic external abstract class
HTMLFrameElement : HTMLElement {\n    open var name: String\n    open var scrolling: String\n    open var src:
String\n    open var frameBorder: String\n    open var longDesc: String\n    open var noResize: Boolean\n    open val
contentDocument: Document?\n    open val contentWindow: Window?\n    open var marginHeight: String\n    open
var marginWidth: String\n\n    companion object {\n        val ELEMENT_NODE: Short\n        val
ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val
ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE: Short\n        val
PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\npublic external abstract class
HTMLDirectoryElement : HTMLElement {\n    open var compact: Boolean\n\n    companion object {\n        val
ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val
CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE:
Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[HTMLFontElement](https://developer.mozilla.org/en/docs/Web/API/HTMLFontElement) to Kotlin\n *\n\npublic
external abstract class HTMLFontElement : HTMLElement {\n    open var color: String\n    open var face: String\n
open var size: String\n\n    companion object {\n        val ELEMENT_NODE: Short\n        val
ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val
ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE: Short\n        val
PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\npublic external interface External
{\n    fun AddSearchProvider()\n    fun IsSearchProviderInstalled()\n}\n\npublic external interface EventInit {\n
var bubbles: Boolean? /* = false */\n    get() = definedExternally\n    set(value) = definedExternally\n
var cancelable: Boolean? /* = false */\n    get() = definedExternally\n    set(value) = definedExternally\n
var composed: Boolean? /* = false */\n    get() = definedExternally\n    set(value) =

```



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definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun EventInit(bubbles: Boolean? = false,
cancelable: Boolean? = false, composed: Boolean? = false): EventInit {\n  val o = js("{}")\n  o["bubbles"] =
bubbles\n  o["cancelable"] = cancelable\n  o["composed"] = composed\n  return o\n}\n\n/**\n * Exposes the
JavaScript [CustomEvent](https://developer.mozilla.org/en/docs/Web/API/CustomEvent) to Kotlin\n */\npublic
external open class CustomEvent(type: String, eventInitDict: CustomEventInit = definedExternally) : Event {\n
  open val detail: Any?\n  fun initCustomEvent(type: String, bubbles: Boolean, cancelable: Boolean, detail:
Any?)\n}\n\n  companion object {\n    val NONE: Short\n    val CAPTURING_PHASE: Short\n    val
AT_TARGET: Short\n    val BUBBLING_PHASE: Short\n  }\n}\n\npublic external interface CustomEventInit :
EventInit {\n  var detail: Any? /* = null */\n  get() = definedExternally\n  set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun CustomEventInit(detail: Any? = null,
bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? = false): CustomEventInit {\n  val o
= js("{}")\n  o["detail"] = detail\n  o["bubbles"] = bubbles\n  o["cancelable"] = cancelable\n
o["composed"] = composed\n  return o\n}\n\npublic external interface EventListenerOptions {\n  var capture:
Boolean? /* = false */\n  get() = definedExternally\n  set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun EventListenerOptions(capture: Boolean? =
false): EventListenerOptions {\n  val o = js("{}")\n  o["capture"] = capture\n  return o\n}\n\npublic external
interface AddEventListenerOptions : EventListenerOptions {\n  var passive: Boolean? /* = false */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var once: Boolean? /* = false */\n  get() =
definedExternally\n  set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
AddEventListenerOptions(passive: Boolean? = false, once: Boolean? = false, capture: Boolean? = false):
AddEventListenerOptions {\n  val o = js("{}")\n  o["passive"] = passive\n  o["once"] = once\n
o["capture"] = capture\n  return o\n}\n\npublic external interface NonElementParentNode {\n  fun
getElementById(elementId: String): Element?\n}\n\n/**\n * Exposes the JavaScript
[DocumentOrShadowRoot](https://developer.mozilla.org/en/docs/Web/API/DocumentOrShadowRoot) to Kotlin\n */\n
public external interface DocumentOrShadowRoot {\n  val fullscreenElement: Element?\n  get() =
definedExternally\n}\n\n/**\n * Exposes the JavaScript
[ParentNode](https://developer.mozilla.org/en/docs/Web/API/ParentNode) to Kotlin\n */\npublic external interface
ParentNode {\n  val children: HTMLCollection\n  val firstElementChild: Element?\n  get() =
definedExternally\n  val lastElementChild: Element?\n  get() = definedExternally\n  val childElementCount:
Int\n  fun prepend(vararg nodes: dynamic)\n  fun append(vararg nodes: dynamic)\n  fun querySelector(selectors:
String): Element?\n  fun querySelectorAll(selectors: String): NodeList\n}\n\n/**\n * Exposes the JavaScript
[NonDocumentTypeChildNode](https://developer.mozilla.org/en/docs/Web/API/NonDocumentTypeChildNode) to
Kotlin\n */\npublic external interface NonDocumentTypeChildNode {\n  val previousElementSibling: Element?\n
  get() = definedExternally\n  val nextElementSibling: Element?\n  get() = definedExternally\n}\n\n/**\n *
Exposes the JavaScript [ChildNode](https://developer.mozilla.org/en/docs/Web/API/ChildNode) to Kotlin\n */\n
public external interface ChildNode {\n  fun before(vararg nodes: dynamic)\n  fun after(vararg nodes:
dynamic)\n  fun replaceWith(vararg nodes: dynamic)\n  fun remove()\n}\n\n/**\n * Exposes the JavaScript
[Slotable](https://developer.mozilla.org/en/docs/Web/API/Slotable) to Kotlin\n */\npublic external interface
Slotable {\n  val assignedSlot: HTMLSlotElement?\n  get() = definedExternally\n}\n\n/**\n * Exposes the JavaScript
[NodeList](https://developer.mozilla.org/en/docs/Web/API/NodeList) to Kotlin\n */\npublic external abstract class
NodeList : ItemArrayLike<Node> {\n  override fun item(index: Int):
Node?\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun NodeList.get(index: Int): Node? =
asDynamic()[index]\n\n/**\n * Exposes the JavaScript
[HTMLCollection](https://developer.mozilla.org/en/docs/Web/API/HTMLCollection) to Kotlin\n */\npublic
external abstract class HTMLCollection : ItemArrayLike<Element>, UnionElementOrHTMLCollection {\n
  override fun item(index: Int): Element?\n  fun namedItem(name: String):
Element?\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun HTMLCollection.get(index: Int): Element?
= asDynamic()[index]\n\n@kotlin.internal.InlineOnly\npublic inline operator fun HTMLCollection.get(name:

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String): Element? = asDynamic()[name]\n\n/**\n * Exposes the JavaScript
[MutationObserver](https://developer.mozilla.org/en/docs/Web/API/MutationObserver) to Kotlin\n\n^public
external open class MutationObserver(callback: (Array<MutationRecord>, MutationObserver) -> Unit) {\n fun
observe(target: Node, options: MutationObserverInit = definedExternally)\n fun disconnect()\n fun
takeRecords(): Array<MutationRecord>\n}\n\n/**\n * Exposes the JavaScript
[MutationObserverInit](https://developer.mozilla.org/en/docs/Web/API/MutationObserverInit) to Kotlin\n
^public external interface MutationObserverInit {\n var childList: Boolean? /* = false */\n get() =
definedExternally\n set(value) = definedExternally\n var attributes: Boolean?\n get() =
definedExternally\n set(value) = definedExternally\n var characterData: Boolean?\n get() =
definedExternally\n set(value) = definedExternally\n var subtree: Boolean? /* = false */\n get() =
definedExternally\n set(value) = definedExternally\n var attributeOldValue: Boolean?\n get() =
definedExternally\n set(value) = definedExternally\n var characterDataOldValue: Boolean?\n get() =
definedExternally\n set(value) = definedExternally\n var attributeFilter: Array<String>?\n get() =
definedExternally\n set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
MutationObserverInit(childList: Boolean? = false, attributes: Boolean? = undefined, characterData: Boolean? =
undefined, subtree: Boolean? = false, attributeOldValue: Boolean? = undefined, characterDataOldValue: Boolean? =
undefined, attributeFilter: Array<String>? = undefined): MutationObserverInit {\n val o = js("{}")\n
o["childList"] = childList\n o["attributes"] = attributes\n o["characterData"] = characterData\n
o["subtree"] = subtree\n o["attributeOldValue"] = attributeOldValue\n o["characterDataOldValue"] =
characterDataOldValue\n o["attributeFilter"] = attributeFilter\n return o}\n\n/**\n * Exposes the JavaScript
[MutationRecord](https://developer.mozilla.org/en/docs/Web/API/MutationRecord) to Kotlin\n\n^public external
abstract class MutationRecord {\n open val type: String\n open val target: Node\n open val addedNodes:
NodeList\n open val removedNodes: NodeList\n open val previousSibling: Node?\n open val nextSibling:
Node?\n open val attributeName: String?\n open val attributeNamespace: String?\n open val oldValue:
String?\n}\n\n/**\n * Exposes the JavaScript [Node](https://developer.mozilla.org/en/docs/Web/API/Node) to
Kotlin\n\n^public external abstract class Node : EventTarget {\n open val nodeType: Short\n open val
nodeName: String\n open val baseURI: String\n open val isConnected: Boolean\n open val ownerDocument:
Document?\n open val parentNode: Node?\n open val parentElement: Element?\n open val childNodes:
NodeList\n open val firstChild: Node?\n open val lastChild: Node?\n open val previousSibling: Node?\n
open val nextSibling: Node?\n open var nodeValue: String?\n open var textContent: String?\n fun
getRootNode(options: GetRootNodeOptions = definedExternally): Node\n fun hasChildNodes(): Boolean\n fun
normalize()\n fun cloneNode(deep: Boolean = definedExternally): Node\n fun isEqualNode(otherNode: Node?):
Boolean\n fun isSameNode(otherNode: Node?): Boolean\n fun compareDocumentPosition(other: Node): Short\n
fun contains(other: Node?): Boolean\n fun lookupPrefix(namespace: String?): String?\n fun
lookupNamespaceURI(prefix: String?): String?\n fun isDefaultNamespace(namespace: String?): Boolean\n fun
insertBefore(node: Node, child: Node?): Node\n fun appendChild(node: Node): Node\n fun replaceChild(node:
Node, child: Node): Node\n fun removeChild(child: Node): Node\n\n companion object {\n val
ELEMENT_NODE: Short\n val ATTRIBUTE_NODE: Short\n val TEXT_NODE: Short\n val
CDATA_SECTION_NODE: Short\n val ENTITY_REFERENCE_NODE: Short\n val ENTITY_NODE:
Short\n val PROCESSING_INSTRUCTION_NODE: Short\n val COMMENT_NODE: Short\n val
DOCUMENT_NODE: Short\n val DOCUMENT_TYPE_NODE: Short\n val
DOCUMENT_FRAGMENT_NODE: Short\n val NOTATION_NODE: Short\n val
DOCUMENT_POSITION_DISCONNECTED: Short\n val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }\n}\n\npublic external interface
GetRootNodeOptions {\n var composed: Boolean? /* = false */\n get() = definedExternally\n set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun GetRootNodeOptions(composed: Boolean?

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= false): GetRootNodeOptions {
    val o = js("{}")
    o["composed"] = composed
    return o
}

Exposes the JavaScript [Document](https://developer.mozilla.org/en/docs/Web/API/Document) to Kotlin

public external open class Document : Node, GlobalEventHandlers, DocumentAndElementEventHandlers,
NonElementParentNode, DocumentOrShadowRoot, ParentNode, GeometryUtils {
    open val implementation: DOMImplementation
    open val URL: String
    open val documentURI: String
    open val origin: String
    open val compatMode: String
    open val characterSet: String
    open val charset: String
    open val inputEncoding: String
    open val contentType: String
    open val doctype: DocumentType?
    open val documentElement: Element?
    open val location: Location?
    var domain: String
    open val referrer: String
    var cookie: String
    open val lastModified: String
    open val readyState: DocumentReadyState
    var title: String
    var dir: String
    var body: HTMLElement?
    open val head: HTMLHeadElement?
    open val images: HTMLCollection
    open val embeds: HTMLCollection
    open val plugins: HTMLCollection
    open val links: HTMLCollection
    open val forms: HTMLCollection
    open val scripts: HTMLCollection
    open val currentScript: HTMLScriptElement?
    open val defaultView: Window?
    open val activeElement: Element?
    var designMode: String
    var onreadystatechange: ((Event) -> dynamic)?
    var fgColor: String
    var linkColor: String
    var vlinkColor: String
    var alinkColor: String
    var bgColor: String
    open val anchors: HTMLCollection
    open val applets: HTMLCollection
    open val all: HTMLAllCollection
    open val scrollingElement: Element?
    open val styleSheets: StyleSheetList
    open val rootElement: SVGSVGElement?
    open val fullscreenEnabled: Boolean
    open val fullscreen: Boolean
    var onfullscreenchange: ((Event) -> dynamic)?
    var onfullscreenerror: ((Event) -> dynamic)?
    override var onabort: ((Event) -> dynamic)?
    override var onblur: ((FocusEvent) -> dynamic)?
    override var onCancel: ((Event) -> dynamic)?
    override var oncanplay: ((Event) -> dynamic)?
    override var oncanplaythrough: ((Event) -> dynamic)?
    override var onChange: ((Event) -> dynamic)?
    override var onclick: ((MouseEvent) -> dynamic)?
    override var onclose: ((Event) -> dynamic)?
    override var oncontextmenu: ((MouseEvent) -> dynamic)?
    override var oncuechange: ((Event) -> dynamic)?
    override var ondblclick: ((MouseEvent) -> dynamic)?
    override var ondrag: ((DragEvent) -> dynamic)?
    override var ondragend: ((DragEvent) -> dynamic)?
    override var ondragenter: ((DragEvent) -> dynamic)?
    override var ondragexit: ((DragEvent) -> dynamic)?
    override var ondragleave: ((DragEvent) -> dynamic)?
    override var ondragover: ((DragEvent) -> dynamic)?
    override var ondragstart: ((DragEvent) -> dynamic)?
    override var ondrop: ((DragEvent) -> dynamic)?
    override var ondurationchange: ((Event) -> dynamic)?
    override var onemptied: ((Event) -> dynamic)?
    override var onended: ((Event) -> dynamic)?
    override var onerror: ((dynamic, String, Int, Int, Any?) -> dynamic)?
    override var onfocus: ((FocusEvent) -> dynamic)?
    override var oninput: ((InputEvent) -> dynamic)?
    override var oninvalid: ((Event) -> dynamic)?
    override var onkeydown: ((KeyboardEvent) -> dynamic)?
    override var onkeypress: ((KeyboardEvent) -> dynamic)?
    override var onkeyup: ((KeyboardEvent) -> dynamic)?
    override var onload: ((Event) -> dynamic)?
    override var onloadeddata: ((Event) -> dynamic)?
    override var onloadedmetadata: ((Event) -> dynamic)?
    override var onloadend: ((Event) -> dynamic)?
    override var onloadstart: ((ProgressEvent) -> dynamic)?
    override var onmousedown: ((MouseEvent) -> dynamic)?
    override var onmouseenter: ((MouseEvent) -> dynamic)?
    override var onmouseleave: ((MouseEvent) -> dynamic)?
    override var onmousemove: ((MouseEvent) -> dynamic)?
    override var onmouseout: ((MouseEvent) -> dynamic)?
    override var onmouseover: ((MouseEvent) -> dynamic)?
    override var onmouseup: ((MouseEvent) -> dynamic)?
    override var onwheel: ((WheelEvent) -> dynamic)?
    override var onpause: ((Event) -> dynamic)?
    override var onplay: ((Event) -> dynamic)?
    override var onplaying: ((Event) -> dynamic)?
    override var onprogress: ((ProgressEvent) -> dynamic)?
    override var onratechange: ((Event) -> dynamic)?
    override var onreset: ((Event) -> dynamic)?
    override var onresize: ((Event) -> dynamic)?
    override var onscroll: ((Event) -> dynamic)?
    override var onseeked: ((Event) -> dynamic)?
    override var onseeking: ((Event) -> dynamic)?
    override var onselect: ((Event) -> dynamic)?
    override var onshow: ((Event) -> dynamic)?
    override var onstalled: ((Event) -> dynamic)?
    override var onsubmit: ((Event) -> dynamic)?
    override var onsuspend: ((Event) -> dynamic)?
    override var ontimeupdate: ((Event) -> dynamic)?
    override var ontoggle: ((Event) -> dynamic)?
    override var

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onvolumechange: ((Event) -> dynamic)?\n  override var onwaiting: ((Event) -> dynamic)?\n  override var
ongotpointercapture: ((PointerEvent) -> dynamic)?\n  override var onlostpointercapture: ((PointerEvent) ->
dynamic)?\n  override var onpointerdown: ((PointerEvent) -> dynamic)?\n  override var onpointermove:
((PointerEvent) -> dynamic)?\n  override var onpointerup: ((PointerEvent) -> dynamic)?\n  override var
onpointercancel: ((PointerEvent) -> dynamic)?\n  override var onpointerover: ((PointerEvent) -> dynamic)?\n
override var onpointerout: ((PointerEvent) -> dynamic)?\n  override var onpointerenter: ((PointerEvent) ->
dynamic)?\n  override var onpointerleave: ((PointerEvent) -> dynamic)?\n  override var oncopy:
((ClipboardEvent) -> dynamic)?\n  override var oncut: ((ClipboardEvent) -> dynamic)?\n  override var onpaste:
((ClipboardEvent) -> dynamic)?\n  override val fullscreenElement: Element?\n  override val children:
HTMLCollection\n  override val firstElementChild: Element?\n  override val lastElementChild: Element?\n
override val childElementCount: Int\n  fun getElementsByTagName(qualifiedName: String): HTMLCollection\n
fun getElementsByTagNameNS(namespace: String?, localName: String): HTMLCollection\n  fun
getElementsByTagName(className: String): HTMLCollection\n  fun createElement(localName: String,
options: ElementCreationOptions = definedExternally): Element\n  fun createElementNS(namespace: String?,
qualifiedName: String, options: ElementCreationOptions = definedExternally): Element\n  fun
createDocumentFragment(): DocumentFragment\n  fun createTextNode(data: String): Text\n  fun
createCDATASection(data: String): CDATASection\n  fun createComment(data: String): Comment\n  fun
createProcessingInstruction(target: String, data: String): ProcessingInstruction\n  fun importNode(node: Node,
deep: Boolean = definedExternally): Node\n  fun adoptNode(node: Node): Node\n  fun
createAttribute(localName: String): Attr\n  fun createAttributeNS(namespace: String?, qualifiedName: String):
Attr\n  fun createEvent(`interface`: String): Event\n  fun createRange(): Range\n  fun createNodeIterator(root:
Node, whatToShow: Int = definedExternally, filter: NodeFilter? = definedExternally): NodeIterator\n  fun
createNodeIterator(root: Node, whatToShow: Int = definedExternally, filter: ((Node) -> Short)? =
definedExternally): NodeIterator\n  fun createTreeWalker(root: Node, whatToShow: Int = definedExternally, filter:
NodeFilter? = definedExternally): TreeWalker\n  fun createTreeWalker(root: Node, whatToShow: Int =
definedExternally, filter: ((Node) -> Short)? = definedExternally): TreeWalker\n  fun
getElementsByTagName(elementName: String): NodeList\n  fun open(type: String = definedExternally, replace:
String = definedExternally): Document\n  fun open(url: String, name: String, features: String): Window\n  fun
close()\n  fun write(vararg text: String)\n  fun writeln(vararg text: String)\n  fun hasFocus(): Boolean\n  fun
execCommand(commandId: String, showUI: Boolean = definedExternally, value: String = definedExternally):
Boolean\n  fun queryCommandEnabled(commandId: String): Boolean\n  fun
queryCommandIndeterm(commandId: String): Boolean\n  fun queryCommandState(commandId: String):
Boolean\n  fun queryCommandSupported(commandId: String): Boolean\n  fun
queryCommandValue(commandId: String): String\n  fun clear()\n  fun captureEvents()\n  fun releaseEvents()\n
fun elementFromPoint(x: Double, y: Double): Element?\n  fun elementsFromPoint(x: Double, y: Double):
Array<Element>\n  fun caretPositionFromPoint(x: Double, y: Double): CaretPosition?\n  fun createTouch(view:
Window, target: EventTarget, identifier: Int, pageX: Int, pageY: Int, screenX: Int, screenY: Int): Touch\n  fun
createTouchList(vararg touches: Touch): TouchList\n  fun exitFullscreen(): Promise<Unit>\n  override fun
getElementById(elementId: String): Element?\n  override fun prepend(vararg nodes: dynamic)\n  override fun
append(vararg nodes: dynamic)\n  override fun querySelector(selectors: String): Element?\n  override fun
querySelectorAll(selectors: String): NodeList\n  override fun getBoxQuads(options: BoxQuadOptions /* =
definedExternally */): Array<DOMQuad>\n  override fun convertQuadFromNode(quad: dynamic, from: dynamic,
options: ConvertCoordinateOptions /* = definedExternally */): DOMQuad\n  override fun
convertRectFromNode(rect: DOMRectReadOnly, from: dynamic, options: ConvertCoordinateOptions /* =
definedExternally */): DOMQuad\n  override fun convertPointFromNode(point: DOMPointInit, from: dynamic,
options: ConvertCoordinateOptions /* = definedExternally */): DOMPoint\n\n  companion object {\n    val
ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val
CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE:

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Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n
}\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun Document.get(name: String): dynamic =
asDynamic()[name]\n\n/**\n * Exposes the JavaScript
[XMLDocument](https://developer.mozilla.org/en/docs/Web/API/XMLDocument) to Kotlin\n */\npublic external
open class XMLDocument : Document {\n    companion object {\n        val ELEMENT_NODE: Short\n        val
ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val
ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE: Short\n        val
PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\npublic external interface
ElementCreationOptions {\n    var `is`: String?\n    get() = definedExternally\n    set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun ElementCreationOptions(`is`: String? =
undefined): ElementCreationOptions {\n    val o = js("{}")\n    o["is"] = `is`\n    return o\n}\n\n/**\n * Exposes
the JavaScript [DOMImplementation](https://developer.mozilla.org/en/docs/Web/API/DOMImplementation) to
Kotlin\n */\npublic external abstract class DOMImplementation {\n    fun createDocumentType(qualifiedName:
String, publicId: String, systemId: String): DocumentType\n    fun createDocument(namespace: String?,
qualifiedName: String, doctype: DocumentType? = definedExternally): XMLDocument\n    fun
createHTMLDocument(title: String = definedExternally): Document\n    fun hasFeature(): Boolean\n}\n\n/**\n *
Exposes the JavaScript [DocumentType](https://developer.mozilla.org/en/docs/Web/API/DocumentType) to
Kotlin\n */\npublic external abstract class DocumentType : Node, ChildNode {\n    open val name: String\n    open
val publicId: String\n    open val systemId: String\n\n    companion object {\n        val ELEMENT_NODE: Short\n
        val ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n
        val ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE: Short\n        val
PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[DocumentFragment](https://developer.mozilla.org/en/docs/Web/API/DocumentFragment) to Kotlin\n */\npublic
external open class DocumentFragment : Node, NonElementParentNode, ParentNode {\n    override val children:
HTMLCollection\n    override val firstElementChild: Element?\n    override val lastElementChild: Element?\n
    override val childElementCount: Int\n    override fun getElementById(elementId: String): Element?\n    override fun
prepend(vararg nodes: dynamic)\n    override fun append(vararg nodes: dynamic)\n    override fun
querySelector(selectors: String): Element?\n    override fun querySelectorAll(selectors: String): NodeList\n\n
companion object {\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val
TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE:

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Short\n    val ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n            val
COMMENT_NODE: Short\n        val DOCUMENT_NODE: Short\n            val DOCUMENT_TYPE_NODE: Short\n
            val DOCUMENT_FRAGMENT_NODE: Short\n                val NOTATION_NODE: Short\n                    val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
            val DOCUMENT_POSITION_FOLLOWING: Short\n                val DOCUMENT_POSITION_CONTAINS: Short\n
                    val DOCUMENT_POSITION_CONTAINED_BY: Short\n                        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n        }\n}\n\n/**\n * Exposes the JavaScript
[ShadowRoot](https://developer.mozilla.org/en/docs/Web/API/ShadowRoot) to Kotlin\n\n * public external open
class ShadowRoot : DocumentFragment, DocumentOrShadowRoot {\n    open val mode: ShadowRootMode\n
open val host: Element\n    override val fullscreenElement: Element?\n\n    companion object {\n        val
ELEMENT_NODE: Short\n            val ATTRIBUTE_NODE: Short\n                val TEXT_NODE: Short\n                    val
CDATA_SECTION_NODE: Short\n                        val ENTITY_REFERENCE_NODE: Short\n                            val ENTITY_NODE:
Short\n                                val PROCESSING_INSTRUCTION_NODE: Short\n                                    val COMMENT_NODE: Short\n
                                        val DOCUMENT_NODE: Short\n                                            val DOCUMENT_TYPE_NODE: Short\n
                                                val DOCUMENT_FRAGMENT_NODE: Short\n                                                    val NOTATION_NODE: Short\n
                                                        val DOCUMENT_POSITION_DISCONNECTED: Short\n                                                            val DOCUMENT_POSITION_PRECEDING: Short\n
                                                                val DOCUMENT_POSITION_FOLLOWING: Short\n                                                                    val DOCUMENT_POSITION_CONTAINS: Short\n
                                                                        val DOCUMENT_POSITION_CONTAINED_BY: Short\n                                                                            val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n                                                                                }\n}\n\n/**\n * Exposes the JavaScript
[Element](https://developer.mozilla.org/en/docs/Web/API/Element) to Kotlin\n\n * public external abstract class
Element : Node, ParentNode, NonDocumentTypeChildNode, ChildNode, Slotable, GeometryUtils,
UnionElementOrHTMLCollection, UnionElementOrRadioNodeList, UnionElementOrMouseEvent,
UnionElementOrProcessingInstruction {\n    open val namespaceURI: String?\n    open val prefix: String?\n    open
val localName: String\n    open val tagName: String\n    open var id: String\n    open var className: String\n    open
val classList: DOMTokenList\n    open var slot: String\n    open val attributes: NamedNodeMap\n    open val
shadowRoot: ShadowRoot?\n    open var scrollTop: Double\n    open var scrollLeft: Double\n    open val
scrollWidth: Int\n    open val scrollHeight: Int\n    open val clientTop: Int\n    open val clientLeft: Int\n    open val
clientWidth: Int\n    open val clientHeight: Int\n    open var innerHTML: String\n    open var outerHTML: String\n
fun hasAttributes(): Boolean\n    fun getAttributeNames(): Array<String>\n    fun getAttribute(qualifiedName:
String): String?\n    fun getAttributeNS(namespace: String?, localName: String): String?\n    fun
setAttribute(qualifiedName: String, value: String)\n    fun setAttributeNS(namespace: String?, qualifiedName:
String, value: String)\n    fun removeAttribute(qualifiedName: String)\n    fun removeAttributeNS(namespace:
String?, localName: String)\n    fun hasAttribute(qualifiedName: String): Boolean\n    fun
hasAttributeNS(namespace: String?, localName: String): Boolean\n    fun getAttributeNode(qualifiedName: String):
Attr?\n    fun getAttributeNodeNS(namespace: String?, localName: String): Attr?\n    fun setAttributeNode(attr:
Attr): Attr?\n    fun setAttributeNodeNS(attr: Attr): Attr?\n    fun removeAttributeNode(attr: Attr): Attr\n    fun
attachShadow(init: ShadowRootInit): ShadowRoot\n    fun closest(selectors: String): Element?\n    fun
matches(selectors: String): Boolean\n    fun webkitMatchesSelector(selectors: String): Boolean\n    fun
getElementsByTagName(qualifiedName: String): HTMLCollection\n    fun
getElementsByTagNameNS(namespace: String?, localName: String): HTMLCollection\n    fun
getElementsByClassName(classNames: String): HTMLCollection\n    fun insertAdjacentElement(where: String,
element: Element): Element?\n    fun insertAdjacentText(where: String, data: String)\n    fun getClientRects():
Array<DOMRect>\n    fun getBoundingClientRect(): DOMRect\n    fun scrollIntoView()\n    fun
scrollIntoView(arg: dynamic)\n    fun scroll(options: ScrollToOptions = definedExternally)\n    fun scroll(x: Double,
y: Double)\n    fun scrollTo(options: ScrollToOptions = definedExternally)\n    fun scrollTo(x: Double, y: Double)\n
    fun scrollBy(options: ScrollToOptions = definedExternally)\n    fun scrollBy(x: Double, y: Double)\n    fun
insertAdjacentHTML(position: String, text: String)\n    fun setPointerCapture(pointerId: Int)\n    fun
releasePointerCapture(pointerId: Int)\n    fun hasPointerCapture(pointerId: Int): Boolean\n    fun requestFullscreen():

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Promise<Unit>\n\n companion object {\n    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }
\n\npublic external interface ShadowRootInit {\n    var mode: ShadowRootMode?\n    get() = definedExternally\n    set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun ShadowRootInit(mode: ShadowRootMode?): ShadowRootInit {\n    val o = js("{}")\n    o["mode"] = mode\n    return o\n}\n\n/**\n * Exposes the JavaScript [NamedNodeMap](https://developer.mozilla.org/en/docs/Web/API/NamedNodeMap) to Kotlin\n */\npublic external abstract class NamedNodeMap : ItemArrayLike<Attr> {\n    fun getNamedItemNS(namespace: String?, localName: String): Attr?\n    fun setNamedItem(attr: Attr): Attr?\n    fun setNamedItemNS(attr: Attr): Attr?\n    fun removeNamedItem(qualifiedName: String): Attr?\n    fun removeNamedItemNS(namespace: String?, localName: String): Attr?\n    override fun item(index: Int): Attr?\n    fun getNamedItem(qualifiedName: String): Attr?\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun NamedNodeMap.get(index: Int): Attr? = asDynamic()[index]\n\n@kotlin.internal.InlineOnly\npublic inline operator fun NamedNodeMap.get(qualifiedName: String): Attr? = asDynamic()[qualifiedName]\n\n/**\n * Exposes the JavaScript [Attr](https://developer.mozilla.org/en/docs/Web/API/Attr) to Kotlin\n */\npublic external abstract class Attr : Node {\n    open val namespaceURI: String?\n    open val prefix: String?\n    open val localName: String\n    open val name: String\n    open var value: String\n    open val ownerElement: Element?\n    open val specified: Boolean\n}\n\n companion object {\n    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }
\n\n/**\n * Exposes the JavaScript [CharacterData](https://developer.mozilla.org/en/docs/Web/API/CharacterData) to Kotlin\n */\npublic external abstract class CharacterData : Node, NonDocumentTypeChildNode, ChildNode {\n    open var data: String\n    open val length: Int\n    fun substringData(offset: Int, count: Int): String\n    fun appendData(data: String)\n    fun insertData(offset: Int, data: String)\n    fun deleteData(offset: Int, count: Int)\n    fun replaceData(offset: Int, count: Int, data: String)\n}\n\n companion object {\n    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }
\n\n/**\n * Exposes the JavaScript [Text](https://developer.mozilla.org/en/docs/Web/API/Text) to Kotlin\n */\npublic external open class Text(data:

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String = definedExternally) : CharacterData, Slotable, GeometryUtils {\n  open val wholeText: String\n  override
val assignedSlot: HTMLSlotElement?\n  override val previousElementSibling: Element?\n  override val
nextElementSibling: Element?\n  fun splitText(offset: Int): Text\n  override fun getBoxQuads(options:
BoxQuadOptions /* = definedExternally */): Array<DOMQuad>\n  override fun convertQuadFromNode(quad:
dynamic, from: dynamic, options: ConvertCoordinateOptions /* = definedExternally */): DOMQuad\n  override
fun convertRectFromNode(rect: DOMRectReadOnly, from: dynamic, options: ConvertCoordinateOptions /* =
definedExternally */): DOMQuad\n  override fun convertPointFromNode(point: DOMPointInit, from: dynamic,
options: ConvertCoordinateOptions /* = definedExternally */): DOMPoint\n  override fun before(vararg nodes:
dynamic)\n  override fun after(vararg nodes: dynamic)\n  override fun replaceWith(vararg nodes: dynamic)\n
override fun remove()\n\n  companion object {\n    val ELEMENT_NODE: Short\n    val
ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val
ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val
PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n  }\n\n  /**\n   * Exposes the JavaScript
[CDATASection](https://developer.mozilla.org/en/docs/Web/API/CDATASection) to Kotlin\n   */\n  public external
open class CDATASection : Text {\n    companion object {\n      val ELEMENT_NODE: Short\n      val
ATTRIBUTE_NODE: Short\n      val TEXT_NODE: Short\n      val CDATA_SECTION_NODE: Short\n      val
ENTITY_REFERENCE_NODE: Short\n      val ENTITY_NODE: Short\n      val
PROCESSING_INSTRUCTION_NODE: Short\n      val COMMENT_NODE: Short\n      val
DOCUMENT_NODE: Short\n      val DOCUMENT_TYPE_NODE: Short\n      val
DOCUMENT_FRAGMENT_NODE: Short\n      val NOTATION_NODE: Short\n      val
DOCUMENT_POSITION_DISCONNECTED: Short\n      val DOCUMENT_POSITION_PRECEDING: Short\n
      val DOCUMENT_POSITION_FOLLOWING: Short\n      val DOCUMENT_POSITION_CONTAINS: Short\n
      val DOCUMENT_POSITION_CONTAINED_BY: Short\n      val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n\n    /**\n     * Exposes the JavaScript
[ProcessingInstruction](https://developer.mozilla.org/en/docs/Web/API/ProcessingInstruction) to Kotlin\n     */\n    public external abstract class ProcessingInstruction : CharacterData, LinkStyle,
UnionElementOrProcessingInstruction {\n      open val target: String\n\n      companion object {\n        val
ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val
CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE:
Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n      }\n\n      /**\n       * Exposes the JavaScript
[Comment](https://developer.mozilla.org/en/docs/Web/API/Comment) to Kotlin\n       */\n      public external open class
Comment(data: String = definedExternally) : CharacterData {\n        override val previousElementSibling: Element?\n
        override val nextElementSibling: Element?\n        override fun before(vararg nodes: dynamic)\n        override fun
after(vararg nodes: dynamic)\n        override fun replaceWith(vararg nodes: dynamic)\n        override fun remove()\n\n
        companion object {\n          val ELEMENT_NODE: Short\n          val ATTRIBUTE_NODE: Short\n          val
TEXT_NODE: Short\n          val CDATA_SECTION_NODE: Short\n          val ENTITY_REFERENCE_NODE:

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open val y: Double\n open val z: Double\n open val w: Double\n fun matrixTransform(matrix:
DOMMatrixReadOnly): DOMPoint\n}\n\n/**\n * Exposes the JavaScript
[DOMPoint](https://developer.mozilla.org/en/docs/Web/API/Point) to Kotlin\n */\npublic external open class
DOMPoint : DOMPointReadOnly {\n constructor(point: DOMPointInit)\n constructor(x: Double =
definedExternally, y: Double = definedExternally, z: Double = definedExternally, w: Double = definedExternally)\n
override var x: Double\n override var y: Double\n override var z: Double\n override var w:
Double\n}\n\n/**\n * Exposes the JavaScript
[DOMPointInit](https://developer.mozilla.org/en/docs/Web/API/PointInit) to Kotlin\n */\npublic external
interface DOMPointInit {\n var x: Double? /* = 0.0 */\n get() = definedExternally\n set(value) =
definedExternally\n var y: Double? /* = 0.0 */\n get() = definedExternally\n set(value) =
definedExternally\n var z: Double? /* = 0.0 */\n get() = definedExternally\n set(value) =
definedExternally\n var w: Double? /* = 1.0 */\n get() = definedExternally\n set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun DOMPointInit(x: Double? = 0.0, y: Double?
= 0.0, z: Double? = 0.0, w: Double? = 1.0): DOMPointInit {\n val o = js("{}")\n o["x"] = x\n o["y"] = y\n
o["z"] = z\n o["w"] = w\n return o\n}\n\n/**\n * Exposes the JavaScript
[DOMRect](https://developer.mozilla.org/en/docs/Web/API/Rect) to Kotlin\n */\npublic external open class
DOMRect(x: Double = definedExternally, y: Double = definedExternally, width: Double = definedExternally,
height: Double = definedExternally) : DOMRectReadOnly {\n override var x: Double\n override var y: Double\n
override var width: Double\n override var height: Double\n}\n\n/**\n * Exposes the JavaScript
[DOMRectReadOnly](https://developer.mozilla.org/en/docs/Web/API/RectReadOnly) to Kotlin\n */\npublic
external open class DOMRectReadOnly(x: Double, y: Double, width: Double, height: Double) {\n open val x:
Double\n open val y: Double\n open val width: Double\n open val height: Double\n open val top: Double\n
open val right: Double\n open val bottom: Double\n open val left: Double\n}\n\npublic external interface
DOMRectInit {\n var x: Double? /* = 0.0 */\n get() = definedExternally\n set(value) =
definedExternally\n var y: Double? /* = 0.0 */\n get() = definedExternally\n set(value) =
definedExternally\n var width: Double? /* = 0.0 */\n get() = definedExternally\n set(value) =
definedExternally\n var height: Double? /* = 0.0 */\n get() = definedExternally\n set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun DOMRectInit(x: Double? = 0.0, y: Double?
= 0.0, width: Double? = 0.0, height: Double? = 0.0): DOMRectInit {\n val o = js("{}")\n o["x"] = x\n
o["y"] = y\n o["width"] = width\n o["height"] = height\n return o\n}\n\npublic external interface
DOMRectList : ItemArrayLike<DOMRect> {\n override fun item(index: Int):
DOMRect?\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun DOMRectList.get(index: Int): DOMRect?
= asDynamic()[index]\n\n/**\n * Exposes the JavaScript
[DOMQuad](https://developer.mozilla.org/en/docs/Web/API/Quad) to Kotlin\n */\npublic external open class
DOMQuad {\n constructor(p1: DOMPointInit = definedExternally, p2: DOMPointInit = definedExternally, p3:
DOMPointInit = definedExternally, p4: DOMPointInit = definedExternally)\n constructor(rect: DOMRectInit)\n
open val p1: DOMPoint\n open val p2: DOMPoint\n open val p3: DOMPoint\n open val p4: DOMPoint\n
open val bounds: DOMRectReadOnly\n}\n\n/**\n * Exposes the JavaScript
[DOMMatrixReadOnly](https://developer.mozilla.org/en/docs/Web/API/MatrixReadOnly) to Kotlin\n
*/\npublic external open class DOMMatrixReadOnly(numberSequence: Array<Double>) {\n open val a: Double\n
open val b: Double\n open val c: Double\n open val d: Double\n open val e: Double\n open val f: Double\n
open val m11: Double\n open val m12: Double\n open val m13: Double\n open val m14: Double\n open val
m21: Double\n open val m22: Double\n open val m23: Double\n open val m24: Double\n open val m31:
Double\n open val m32: Double\n open val m33: Double\n open val m34: Double\n open val m41: Double\n
open val m42: Double\n open val m43: Double\n open val m44: Double\n open val is2D: Boolean\n open
val isIdentity: Boolean\n fun translate(tx: Double, ty: Double, tz: Double = definedExternally): DOMMatrix\n
fun scale(scale: Double, originX: Double = definedExternally, originY: Double = definedExternally): DOMMatrix\n
fun scale3d(scale: Double, originX: Double = definedExternally, originY: Double = definedExternally, originZ:

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Double = definedExternally): DOMMatrix\n fun scaleNonUniform(scaleX: Double, scaleY: Double =
definedExternally, scaleZ: Double = definedExternally, originX: Double = definedExternally, originY: Double =
definedExternally, originZ: Double = definedExternally): DOMMatrix\n fun rotate(angle: Double, originX:
Double = definedExternally, originY: Double = definedExternally): DOMMatrix\n fun rotateFromVector(x:
Double, y: Double): DOMMatrix\n fun rotateAxisAngle(x: Double, y: Double, z: Double, angle: Double):
DOMMatrix\n fun skewX(sx: Double): DOMMatrix\n fun skewY(sy: Double): DOMMatrix\n fun
multiply(other: DOMMatrix): DOMMatrix\n fun flipX(): DOMMatrix\n fun flipY(): DOMMatrix\n fun
inverse(): DOMMatrix\n fun transformPoint(point: DOMPointInit = definedExternally): DOMPoint\n fun
toFloat32Array(): Float32Array\n fun toFloat64Array(): Float64Array\n}\n\n/**\n * Exposes the JavaScript
[DOMMatrix](https://developer.mozilla.org/en/docs/Web/API/DOMMatrix) to Kotlin\n */\npublic external open
class DOMMatrix() : DOMMatrixReadOnly {\n constructor(transformList: String)\n constructor(other:
DOMMatrixReadOnly)\n constructor(array32: Float32Array)\n constructor(array64: Float64Array)\n
constructor(numberSequence: Array<Double>)\n override var a: Double\n override var b: Double\n override
var c: Double\n override var d: Double\n override var e: Double\n override var f: Double\n override
var m11: Double\n override var m12: Double\n override var m13: Double\n override var m14: Double\n override var
m21: Double\n override var m22: Double\n override var m23: Double\n override var m24: Double\n override
var m31: Double\n override var m32: Double\n override var m33: Double\n override var m34: Double\n
override var m41: Double\n override var m42: Double\n override var m43: Double\n override var m44:
Double\n fun multiplySelf(other: DOMMatrix): DOMMatrix\n fun preMultiplySelf(other: DOMMatrix):
DOMMatrix\n fun translateSelf(tx: Double, ty: Double, tz: Double = definedExternally): DOMMatrix\n fun
scaleSelf(scale: Double, originX: Double = definedExternally, originY: Double = definedExternally): DOMMatrix\n
fun scale3dSelf(scale: Double, originX: Double = definedExternally, originY: Double = definedExternally,
originZ: Double = definedExternally): DOMMatrix\n fun scaleNonUniformSelf(scaleX: Double, scaleY: Double =
definedExternally, scaleZ: Double = definedExternally, originX: Double = definedExternally, originY: Double =
definedExternally, originZ: Double = definedExternally): DOMMatrix\n fun rotateSelf(angle: Double, originX:
Double = definedExternally, originY: Double = definedExternally): DOMMatrix\n fun rotateFromVectorSelf(x:
Double, y: Double): DOMMatrix\n fun rotateAxisAngleSelf(x: Double, y: Double, z: Double, angle: Double):
DOMMatrix\n fun skewXSelf(sx: Double): DOMMatrix\n fun skewYSelf(sy: Double): DOMMatrix\n fun
invertSelf(): DOMMatrix\n fun setMatrixValue(transformList: String): DOMMatrix\n}\n\npublic external
interface ScrollOptions {\n var behavior: ScrollBehavior? /* = ScrollBehavior.AUTO */\n get() =
definedExternally\n set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
ScrollOptions(behavior: ScrollBehavior? = ScrollBehavior.AUTO): ScrollOptions {\n val o = js("{}")\n
o["behavior"] = behavior\n return o\n}\n\n/**\n * Exposes the JavaScript
[ScrollToOptions](https://developer.mozilla.org/en/docs/Web/API/ScrollToOptions) to Kotlin\n */\npublic external
interface ScrollToOptions : ScrollOptions {\n var left: Double?\n get() = definedExternally\n set(value) =
definedExternally\n var top: Double?\n get() = definedExternally\n set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun ScrollToOptions(left: Double? = undefined,
top: Double? = undefined, behavior: ScrollBehavior? = ScrollBehavior.AUTO): ScrollToOptions {\n val o =
js("{}")\n o["left"] = left\n o["top"] = top\n o["behavior"] = behavior\n return o\n}\n\n/**\n *
Exposes the JavaScript [MediaQueryList](https://developer.mozilla.org/en/docs/Web/API/MediaQueryList) to
Kotlin\n */\npublic external abstract class MediaQueryList : EventTarget {\n open val media: String\n open val
matches: Boolean\n open var onchange: ((Event) -> dynamic)?\n fun addListener(listener: EventListener?)\n
fun addListener(listener: ((Event) -> Unit)?)\n fun removeListener(listener: EventListener?)\n fun
removeListener(listener: ((Event) -> Unit)?)\n}\n\n/**\n * Exposes the JavaScript
[MediaQueryListEvent](https://developer.mozilla.org/en/docs/Web/API/MediaQueryListEvent) to Kotlin\n
*/\npublic external open class MediaQueryListEvent(type: String, eventInitDict: MediaQueryListEventInit =
definedExternally) : Event {\n open val media: String\n open val matches: Boolean\n\n companion object {\n
val NONE: Short\n val CAPTURING_PHASE: Short\n val AT_TARGET: Short\n val

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BUBBLING_PHASE: Short\n  }\n}\n\npublic external interface MediaQueryListEventInit : EventInit {\n  var
media: String? /* = \"\" */\n  get() = definedExternally\n  set(value) = definedExternally\n  var matches:
Boolean? /* = false */\n  get() = definedExternally\n  set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun MediaQueryListEventInit(media: String? =
\"\", matches: Boolean? = false, bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? =
false): MediaQueryListEventInit {\n  val o = js(\"({})\")\n  o[\"media\"] = media\n  o[\"matches\"] = matches\n
o[\"bubbles\"] = bubbles\n  o[\"cancelable\"] = cancelable\n  o[\"composed\"] = composed\n  return
o\n}\n\n/**\n * Exposes the JavaScript [Screen](https://developer.mozilla.org/en/docs/Web/API/Screen) to Kotlin\n
*/\npublic external abstract class Screen {\n  open val availWidth: Int\n  open val availHeight: Int\n  open val
width: Int\n  open val height: Int\n  open val colorDepth: Int\n  open val pixelDepth: Int\n}\n\n/**\n * Exposes
the JavaScript [CaretPosition](https://developer.mozilla.org/en/docs/Web/API/CaretPosition) to Kotlin\n
*/\npublic external abstract class CaretPosition {\n  open val offsetNode: Node\n  open val offset: Int\n  fun
getClientRect(): DOMRect?\n}\n\npublic external interface ScrollIntoViewOptions : ScrollOptions {\n  var block:
ScrollLogicalPosition? /* = ScrollLogicalPosition.CENTER */\n  get() = definedExternally\n  set(value) =
definedExternally\n  var inline: ScrollLogicalPosition? /* = ScrollLogicalPosition.CENTER */\n  get() =
definedExternally\n  set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
ScrollIntoViewOptions(block: ScrollLogicalPosition? = ScrollLogicalPosition.CENTER, inline:
ScrollLogicalPosition? = ScrollLogicalPosition.CENTER, behavior: ScrollBehavior? = ScrollBehavior.AUTO):
ScrollIntoViewOptions {\n  val o = js(\"({})\")\n  o[\"block\"] = block\n  o[\"inline\"] = inline\n  o[\"behavior\"]
= behavior\n  return o\n}\n\npublic external interface BoxQuadOptions {\n  var box: CSSBoxType? /* =
CSSBoxType.BORDER */\n  get() = definedExternally\n  set(value) = definedExternally\n  var relativeTo:
dynamic\n  get() = definedExternally\n  set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun BoxQuadOptions(box: CSSBoxType? =
CSSBoxType.BORDER, relativeTo: dynamic = undefined): BoxQuadOptions {\n  val o = js(\"({})\")\n
o[\"box\"] = box\n  o[\"relativeTo\"] = relativeTo\n  return o\n}\n\npublic external interface
ConvertCoordinateOptions {\n  var fromBox: CSSBoxType? /* = CSSBoxType.BORDER */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var toBox: CSSBoxType? /* = CSSBoxType.BORDER
*/\n  get() = definedExternally\n  set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic
inline fun ConvertCoordinateOptions(fromBox: CSSBoxType? = CSSBoxType.BORDER, toBox: CSSBoxType? =
CSSBoxType.BORDER): ConvertCoordinateOptions {\n  val o = js(\"({})\")\n  o[\"fromBox\"] = fromBox\n
o[\"toBox\"] = toBox\n  return o\n}\n\n/**\n * Exposes the JavaScript
[GeometryUtils](https://developer.mozilla.org/en/docs/Web/API/GeometryUtils) to Kotlin\n
*/\npublic external interface GeometryUtils {\n  fun getBoxQuads(options: BoxQuadOptions = definedExternally):
Array<DOMQuad>\n  fun convertQuadFromNode(quad: dynamic, from: dynamic, options:
ConvertCoordinateOptions = definedExternally): DOMQuad\n  fun convertRectFromNode(rect:
DOMRectReadOnly, from: dynamic, options: ConvertCoordinateOptions = definedExternally): DOMQuad\n  fun
convertPointFromNode(point: DOMPointInit, from: dynamic, options: ConvertCoordinateOptions =
definedExternally): DOMPoint\n}\n\n/**\n * Exposes the JavaScript
[Touch](https://developer.mozilla.org/en/docs/Web/API/Touch) to Kotlin\n
*/\npublic external abstract class Touch
{\n  open val identifier: Int\n  open val target: EventTarget\n  open val screenX: Int\n  open val screenY: Int\n
open val clientX: Int\n  open val clientY: Int\n  open val pageX: Int\n  open val pageY: Int\n  open val region:
String?\n}\n\npublic external abstract class TouchList : ItemArrayLike<Touch> {\n  override fun item(index: Int):
Touch?\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun TouchList.get(index: Int): Touch? =
asDynamic()[index]\n\npublic external open class TouchEvent : UIEvent {\n  open val touches: TouchList\n
open val targetTouches: TouchList\n  open val changedTouches: TouchList\n  open val altKey: Boolean\n  open
val metaKey: Boolean\n  open val ctrlKey: Boolean\n  open val shiftKey: Boolean\n\n  companion object {\n
val NONE: Short\n  val CAPTURING_PHASE: Short\n  val AT_TARGET: Short\n  val
BUBBLING_PHASE: Short\n  }\n}\n\n/**\n * Exposes the JavaScript

```

[Image](https://developer.mozilla.org/en/docs/Web/API/Image) to Kotlin\n \*\\npublic external open class Image(width: Int = definedExternally, height: Int = definedExternally) : HTMLImageElement {\n override var onabort: ((Event) -> dynamic)?\n override var onblur: ((FocusEvent) -> dynamic)?\n override var oncancel: ((Event) -> dynamic)?\n override var oncanplay: ((Event) -> dynamic)?\n override var oncanplaythrough: ((Event) -> dynamic)?\n override var onchange: ((Event) -> dynamic)?\n override var onclick: ((MouseEvent) -> dynamic)?\n override var onclose: ((Event) -> dynamic)?\n override var oncontextmenu: ((MouseEvent) -> dynamic)?\n override var oncuechange: ((Event) -> dynamic)?\n override var ondblclick: ((MouseEvent) -> dynamic)?\n override var ondrag: ((DragEvent) -> dynamic)?\n override var ondragend: ((DragEvent) -> dynamic)?\n override var ondragenter: ((DragEvent) -> dynamic)?\n override var ondragexit: ((DragEvent) -> dynamic)?\n override var ondragleave: ((DragEvent) -> dynamic)?\n override var ondragover: ((DragEvent) -> dynamic)?\n override var ondragstart: ((DragEvent) -> dynamic)?\n override var ondrop: ((DragEvent) -> dynamic)?\n override var ondurationchange: ((Event) -> dynamic)?\n override var onemptied: ((Event) -> dynamic)?\n override var onended: ((Event) -> dynamic)?\n override var onerror: ((dynamic, String, Int, Int, Any?) -> dynamic)?\n override var onfocus: ((FocusEvent) -> dynamic)?\n override var oninput: ((InputEvent) -> dynamic)?\n override var oninvalid: ((Event) -> dynamic)?\n override var onkeydown: ((KeyboardEvent) -> dynamic)?\n override var onkeypress: ((KeyboardEvent) -> dynamic)?\n override var onkeyup: ((KeyboardEvent) -> dynamic)?\n override var onload: ((Event) -> dynamic)?\n override var onloadeddata: ((Event) -> dynamic)?\n override var onloadedmetadata: ((Event) -> dynamic)?\n override var onloadend: ((Event) -> dynamic)?\n override var onloadstart: ((ProgressEvent) -> dynamic)?\n override var onmousedown: ((MouseEvent) -> dynamic)?\n override var onmouseenter: ((MouseEvent) -> dynamic)?\n override var onmouseleave: ((MouseEvent) -> dynamic)?\n override var onmousemove: ((MouseEvent) -> dynamic)?\n override var onmouseout: ((MouseEvent) -> dynamic)?\n override var onmouseover: ((MouseEvent) -> dynamic)?\n override var onmouseup: ((MouseEvent) -> dynamic)?\n override var onwheel: ((WheelEvent) -> dynamic)?\n override var onpause: ((Event) -> dynamic)?\n override var onplay: ((Event) -> dynamic)?\n override var onplaying: ((Event) -> dynamic)?\n override var onprogress: ((ProgressEvent) -> dynamic)?\n override var onratechange: ((Event) -> dynamic)?\n override var onreset: ((Event) -> dynamic)?\n override var onresize: ((Event) -> dynamic)?\n override var onscroll: ((Event) -> dynamic)?\n override var onseeked: ((Event) -> dynamic)?\n override var onseeking: ((Event) -> dynamic)?\n override var onselect: ((Event) -> dynamic)?\n override var onshow: ((Event) -> dynamic)?\n override var onstalled: ((Event) -> dynamic)?\n override var onsubmit: ((Event) -> dynamic)?\n override var onsuspend: ((Event) -> dynamic)?\n override var ontimeupdate: ((Event) -> dynamic)?\n override var ontoggle: ((Event) -> dynamic)?\n override var onvolumechange: ((Event) -> dynamic)?\n override var onwaiting: ((Event) -> dynamic)?\n override var ongotpointercapture: ((PointerEvent) -> dynamic)?\n override var onlostpointercapture: ((PointerEvent) -> dynamic)?\n override var onpointerdown: ((PointerEvent) -> dynamic)?\n override var onpointermove: ((PointerEvent) -> dynamic)?\n override var onpointerup: ((PointerEvent) -> dynamic)?\n override var onpointercancel: ((PointerEvent) -> dynamic)?\n override var onpointerover: ((PointerEvent) -> dynamic)?\n override var onpointerout: ((PointerEvent) -> dynamic)?\n override var onpointerenter: ((PointerEvent) -> dynamic)?\n override var onpointerleave: ((PointerEvent) -> dynamic)?\n override var oncopy: ((ClipboardEvent) -> dynamic)?\n override var oncut: ((ClipboardEvent) -> dynamic)?\n override var onpaste: ((ClipboardEvent) -> dynamic)?\n override var contentEditable: String\n override val isContentEditable: Boolean\n override val style: CSSStyleDeclaration\n override val children: HTMLCollection\n override val firstElementChild: Element?\n override val lastElementChild: Element?\n override val childElementCount: Int\n override val previousElementSibling: Element?\n override val nextElementSibling: Element?\n override val assignedSlot: HTMLSlotElement?\n override fun prepend(vararg nodes: dynamic)\n override fun append(vararg nodes: dynamic)\n override fun querySelector(selectors: String): Element?\n override fun querySelectorAll(selectors: String): NodeList\n override fun before(vararg nodes: dynamic)\n override fun after(vararg nodes: dynamic)\n override fun replaceWith(vararg nodes: dynamic)\n override fun remove()\n override fun getBoxQuads(options: BoxQuadOptions /\* = definedExternally \*/): Array<DOMQuad>\n override

```

fun convertQuadFromNode(quad: dynamic, from: dynamic, options: ConvertCoordinateOptions /* =
definedExternally */): DOMQuad\n  override fun convertRectFromNode(rect: DOMRectReadOnly, from:
dynamic, options: ConvertCoordinateOptions /* = definedExternally */): DOMQuad\n  override fun
convertPointFromNode(point: DOMPointInit, from: dynamic, options: ConvertCoordinateOptions /* =
definedExternally */): DOMPoint\n\n  companion object {\n    val ELEMENT_NODE: Short\n    val
ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val
ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val
PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n  }\n\n  public external open class
Audio(src: String = definedExternally) : HTMLAudioElement {\n    override var onabort: ((Event) -> dynamic)?\n
    override var onblur: ((FocusEvent) -> dynamic)?\n    override var oncancel: ((Event) -> dynamic)?\n
    override var oncanplay: ((Event) -> dynamic)?\n    override var oncanplaythrough: ((Event) -> dynamic)?\n
    override var onchange: ((Event) -> dynamic)?\n    override var onclick: ((MouseEvent) -> dynamic)?\n
    override var onclose: ((Event) -> dynamic)?\n    override var oncontextmenu: ((MouseEvent) -> dynamic)?\n
    override var oncuechange: ((Event) -> dynamic)?\n    override var ondblclick: ((MouseEvent) -> dynamic)?\n
    override var ondrag: ((DragEvent) -> dynamic)?\n    override var ondragend: ((DragEvent) -> dynamic)?\n
    override var ondragenter: ((DragEvent) -> dynamic)?\n    override var ondragexit: ((DragEvent) -> dynamic)?\n
    override var ondragleave: ((DragEvent) -> dynamic)?\n    override var ondragover: ((DragEvent) -> dynamic)?\n
    override var ondragstart: ((DragEvent) -> dynamic)?\n    override var ondrop: ((DragEvent) -> dynamic)?\n
    override var ondurationchange: ((Event) -> dynamic)?\n    override var onemptied: ((Event) -> dynamic)?\n
    override var onended: ((Event) -> dynamic)?\n    override var onerror: ((dynamic, String, Int, Int, Any?) -> dynamic)?\n
    override var onfocus: ((FocusEvent) -> dynamic)?\n    override var oninput: ((InputEvent) -> dynamic)?\n
    override var oninvalid: ((Event) -> dynamic)?\n    override var onkeydown: ((KeyboardEvent) -> dynamic)?\n
    override var onkeypress: ((KeyboardEvent) -> dynamic)?\n    override var onkeyup: ((KeyboardEvent) -> dynamic)?\n
    override var onload: ((Event) -> dynamic)?\n    override var onloadeddata: ((Event) -> dynamic)?\n
    override var onloadedmetadata: ((Event) -> dynamic)?\n    override var onloadend: ((Event) -> dynamic)?\n
    override var onloadstart: ((ProgressEvent) -> dynamic)?\n    override var onmousedown: ((MouseEvent) -> dynamic)?\n
    override var onmouseenter: ((MouseEvent) -> dynamic)?\n    override var onmouseleave: ((MouseEvent) -> dynamic)?\n
    override var onmousemove: ((MouseEvent) -> dynamic)?\n    override var onmouseout: ((MouseEvent) ->
dynamic)?\n    override var onmouseover: ((MouseEvent) -> dynamic)?\n    override var onmouseup: ((MouseEvent)
-> dynamic)?\n    override var onwheel: ((WheelEvent) -> dynamic)?\n    override var onpause: ((Event) ->
dynamic)?\n    override var onplay: ((Event) -> dynamic)?\n    override var onplaying: ((Event) -> dynamic)?\n
    override var onprogress: ((ProgressEvent) -> dynamic)?\n    override var onratechange: ((Event) -> dynamic)?\n
    override var onreset: ((Event) -> dynamic)?\n    override var onresize: ((Event) -> dynamic)?\n
    override var onscroll: ((Event) -> dynamic)?\n    override var onseeked: ((Event) -> dynamic)?\n
    override var onseeking: ((Event) -> dynamic)?\n    override var onselect: ((Event) -> dynamic)?\n
    override var onshow: ((Event) -> dynamic)?\n    override var onstalled: ((Event) -> dynamic)?\n
    override var onsubmit: ((Event) -> dynamic)?\n    override var onsuspend: ((Event) -> dynamic)?\n
    override var ontimeupdate: ((Event) -> dynamic)?\n    override var ontoggle: ((Event) -> dynamic)?\n
    override var onvolumechange: ((Event) -> dynamic)?\n    override var onwaiting: ((Event) -> dynamic)?\n
    override var ongotpointercapture: ((PointerEvent) -> dynamic)?\n    override var onlostpointercapture: ((PointerEvent) ->
dynamic)?\n    override var onpointerdown: ((PointerEvent) -> dynamic)?\n    override var onpointermove: ((PointerEvent) ->
dynamic)?\n    override var onpointerup: ((PointerEvent) -> dynamic)?\n    override var onpointercancel: ((PointerEvent) ->
dynamic)?\n    override var

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onpointerover: ((PointerEvent) -> dynamic)?\n  override var onpointerout: ((PointerEvent) -> dynamic)?\n
override var onpointerenter: ((PointerEvent) -> dynamic)?\n  override var onpointerleave: ((PointerEvent) ->
dynamic)?\n  override var oncopy: ((ClipboardEvent) -> dynamic)?\n  override var oncut: ((ClipboardEvent) ->
dynamic)?\n  override var onpaste: ((ClipboardEvent) -> dynamic)?\n  override var contentEditable: String\n
override val isContentEditable: Boolean\n  override val style: CSSStyleDeclaration\n  override val children:
HTMLCollection\n  override val firstElementChild: Element?\n  override val lastElementChild: Element?\n
override val childElementCount: Int\n  override val previousElementSibling: Element?\n  override val
nextElementSibling: Element?\n  override val assignedSlot: HTMLSlotElement?\n  override fun prepend(vararg
nodes: dynamic)\n  override fun append(vararg nodes: dynamic)\n  override fun querySelector(selectors: String):
Element?\n  override fun querySelectorAll(selectors: String): NodeList\n  override fun before(vararg nodes:
dynamic)\n  override fun after(vararg nodes: dynamic)\n  override fun replaceWith(vararg nodes: dynamic)\n
override fun remove()\n  override fun getBoxQuads(options: BoxQuadOptions /* = definedExternally */):
Array<DOMQuad>\n  override fun convertQuadFromNode(quad: dynamic, from: dynamic, options:
ConvertCoordinateOptions /* = definedExternally */): DOMQuad\n  override fun convertRectFromNode(rect:
DOMRectReadOnly, from: dynamic, options: ConvertCoordinateOptions /* = definedExternally */): DOMQuad\n
override fun convertPointFromNode(point: DOMPointInit, from: dynamic, options: ConvertCoordinateOptions /* =
definedExternally */): DOMPoint\n\n  companion object {\n    val NETWORK_EMPTY: Short\n    val
NETWORK_IDLE: Short\n    val NETWORK_LOADING: Short\n    val NETWORK_NO_SOURCE: Short\n
    val HAVE_NOTHING: Short\n    val HAVE_METADATA: Short\n    val HAVE_CURRENT_DATA:
Short\n    val HAVE_FUTURE_DATA: Short\n    val HAVE_ENOUGH_DATA: Short\n    val
ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val
CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE:
Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n  }\n}\n\n/**\n * Exposes the JavaScript
[Option](https://developer.mozilla.org/en/docs/Web/API/Option) to Kotlin\n */\n\npublic external open class
Option(text: String = definedExternally, value: String = definedExternally, defaultSelected: Boolean =
definedExternally, selected: Boolean = definedExternally) : HTMLOptionElement {\n  override var onabort:
((Event) -> dynamic)?\n  override var onblur: ((FocusEvent) -> dynamic)?\n  override var onCancel: ((Event) ->
dynamic)?\n  override var oncanplay: ((Event) -> dynamic)?\n  override var oncanplaythrough: ((Event) ->
dynamic)?\n  override var onchange: ((Event) -> dynamic)?\n  override var onclick: ((MouseEvent) ->
dynamic)?\n  override var onclose: ((Event) -> dynamic)?\n  override var oncontextmenu: ((MouseEvent) ->
dynamic)?\n  override var oncuechange: ((Event) -> dynamic)?\n  override var ondblclick: ((MouseEvent) ->
dynamic)?\n  override var ondrag: ((DragEvent) -> dynamic)?\n  override var ondragend: ((DragEvent) ->
dynamic)?\n  override var ondragenter: ((DragEvent) -> dynamic)?\n  override var ondragexit: ((DragEvent) ->
dynamic)?\n  override var ondragleave: ((DragEvent) -> dynamic)?\n  override var ondragover: ((DragEvent) ->
dynamic)?\n  override var ondragstart: ((DragEvent) -> dynamic)?\n  override var ondrop: ((DragEvent) ->
dynamic)?\n  override var ondurationchange: ((Event) -> dynamic)?\n  override var onemptied: ((Event) ->
dynamic)?\n  override var onended: ((Event) -> dynamic)?\n  override var onerror: ((dynamic, String, Int, Int,
Any?) -> dynamic)?\n  override var onfocus: ((FocusEvent) -> dynamic)?\n  override var oninput: ((InputEvent) -
> dynamic)?\n  override var oninvalid: ((Event) -> dynamic)?\n  override var onkeydown: ((KeyboardEvent) ->
dynamic)?\n  override var onkeypress: ((KeyboardEvent) -> dynamic)?\n  override var onkeyup:
((KeyboardEvent) -> dynamic)?\n  override var onload: ((Event) -> dynamic)?\n  override var onloadeddata:
((Event) -> dynamic)?\n  override var onloadedmetadata: ((Event) -> dynamic)?\n  override var onloadend:

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((Event) -> dynamic)?\n  override var onloadstart: ((ProgressEvent) -> dynamic)?\n  override var onmousedown:
((MouseEvent) -> dynamic)?\n  override var onmouseenter: ((MouseEvent) -> dynamic)?\n  override var
onmouseleave: ((MouseEvent) -> dynamic)?\n  override var onmousemove: ((MouseEvent) -> dynamic)?\n
override var onmouseout: ((MouseEvent) -> dynamic)?\n  override var onmouseover: ((MouseEvent) ->
dynamic)?\n  override var onmouseup: ((MouseEvent) -> dynamic)?\n  override var onwheel: ((WheelEvent) ->
dynamic)?\n  override var onpause: ((Event) -> dynamic)?\n  override var onplay: ((Event) -> dynamic)?\n
override var onplaying: ((Event) -> dynamic)?\n  override var onprogress: ((ProgressEvent) -> dynamic)?\n
override var onratechange: ((Event) -> dynamic)?\n  override var onreset: ((Event) -> dynamic)?\n  override var
onresize: ((Event) -> dynamic)?\n  override var onscroll: ((Event) -> dynamic)?\n  override var onseeked:
((Event) -> dynamic)?\n  override var onseeking: ((Event) -> dynamic)?\n  override var onselect: ((Event) ->
dynamic)?\n  override var onshow: ((Event) -> dynamic)?\n  override var onstalled: ((Event) -> dynamic)?\n
override var onsubmit: ((Event) -> dynamic)?\n  override var onsuspend: ((Event) -> dynamic)?\n  override var
ontimeupdate: ((Event) -> dynamic)?\n  override var ontoggle: ((Event) -> dynamic)?\n  override var
onvolumechange: ((Event) -> dynamic)?\n  override var onwaiting: ((Event) -> dynamic)?\n  override var
ongotpointercapture: ((PointerEvent) -> dynamic)?\n  override var onlostpointercapture: ((PointerEvent) ->
dynamic)?\n  override var onpointerdown: ((PointerEvent) -> dynamic)?\n  override var onpointermove:
((PointerEvent) -> dynamic)?\n  override var onpointerup: ((PointerEvent) -> dynamic)?\n  override var
onpointercancel: ((PointerEvent) -> dynamic)?\n  override var onpointerover: ((PointerEvent) -> dynamic)?\n
override var onpointerout: ((PointerEvent) -> dynamic)?\n  override var onpointerenter: ((PointerEvent) ->
dynamic)?\n  override var onpointerleave: ((PointerEvent) -> dynamic)?\n  override var oncopy:
((ClipboardEvent) -> dynamic)?\n  override var oncut: ((ClipboardEvent) -> dynamic)?\n  override var onpaste:
((ClipboardEvent) -> dynamic)?\n  override var contentEditable: String\n  override val isContentEditable:
Boolean\n  override val style: CSSStyleDeclaration\n  override val children: HTMLCollection\n  override val
firstElementChild: Element?\n  override val lastElementChild: Element?\n  override val childElementCount: Int\n
  override val previousElementSibling: Element?\n  override val nextElementSibling: Element?\n  override val
assignedSlot: HTMLSlotElement?\n  override fun prepend(vararg nodes: dynamic)\n  override fun append(vararg
nodes: dynamic)\n  override fun querySelector(selectors: String): Element?\n  override fun
querySelectorAll(selectors: String): NodeList\n  override fun before(vararg nodes: dynamic)\n  override fun
after(vararg nodes: dynamic)\n  override fun replaceWith(vararg nodes: dynamic)\n  override fun remove()\n
override fun getBoxQuads(options: BoxQuadOptions /* = definedExternally */): Array<DOMQuad>\n  override
fun convertQuadFromNode(quad: dynamic, from: dynamic, options: ConvertCoordinateOptions /* =
definedExternally */): DOMQuad\n  override fun convertRectFromNode(rect: DOMRectReadOnly, from:
dynamic, options: ConvertCoordinateOptions /* = definedExternally */): DOMQuad\n  override fun
convertPointFromNode(point: DOMPointInit, from: dynamic, options: ConvertCoordinateOptions /* =
definedExternally */): DOMPoint\n\n  companion object {\n    val ELEMENT_NODE: Short\n    val
ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val
ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val
PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n  }\n}\n\npublic external interface
UnionElementOrHTMLCollection\n\npublic external interface UnionElementOrRadioNodeList\n\npublic external
interface UnionHTMLOptGroupElementOrHTMLOptionElement\n\npublic external interface
UnionAudioTrackOrTextTrackOrVideoTrack\n\npublic external interface UnionElementOrMouseEvent\n\npublic
external interface RenderingContext\n\npublic external interface HTMLOrSVGImageElement :

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CanvasImageSource\n\npublic external interface CanvasImageSource : ImageBitmapSource\n\npublic external
interface ImageBitmapSource\n\npublic external interface UnionMessagePortOrWindowProxy\n\npublic external
interface HTMLOrSVGScriptElement\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface
DocumentReadyState {\n\ncompanion object\n}\n\npublic inline val DocumentReadyState.Companion.LOADING:
DocumentReadyState get() = "loading".asDynamic().unsafeCast<DocumentReadyState>()\n\npublic inline val
DocumentReadyState.Companion.INTERACTIVE: DocumentReadyState get() =
"interactive".asDynamic().unsafeCast<DocumentReadyState>()\n\npublic inline val
DocumentReadyState.Companion.COMPLETE: DocumentReadyState get() =
"complete".asDynamic().unsafeCast<DocumentReadyState>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface
CanPlayTypeResult {\n\ncompanion object\n}\n\npublic inline val CanPlayTypeResult.Companion.EMPTY:
CanPlayTypeResult get() = "".asDynamic().unsafeCast<CanPlayTypeResult>()\n\npublic inline val
CanPlayTypeResult.Companion.MAYBE: CanPlayTypeResult get() =
"maybe".asDynamic().unsafeCast<CanPlayTypeResult>()\n\npublic inline val
CanPlayTypeResult.Companion.PROBABLY: CanPlayTypeResult get() =
"probably".asDynamic().unsafeCast<CanPlayTypeResult>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface TextTrackMode
{\n\ncompanion object\n}\n\npublic inline val TextTrackMode.Companion.DISABLED: TextTrackMode get() =
"disabled".asDynamic().unsafeCast<TextTrackMode>()\n\npublic inline val
TextTrackMode.Companion.HIDDEN: TextTrackMode get() =
"hidden".asDynamic().unsafeCast<TextTrackMode>()\n\npublic inline val
TextTrackMode.Companion.SHOWING: TextTrackMode get() =
"showing".asDynamic().unsafeCast<TextTrackMode>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface TextTrackKind
{\n\ncompanion object\n}\n\npublic inline val TextTrackKind.Companion.SUBTITLES: TextTrackKind get() =
"subtitles".asDynamic().unsafeCast<TextTrackKind>()\n\npublic inline val
TextTrackKind.Companion.CAPTIONS: TextTrackKind get() =
"captions".asDynamic().unsafeCast<TextTrackKind>()\n\npublic inline val
TextTrackKind.Companion.DESCRPTIONS: TextTrackKind get() =
"descriptions".asDynamic().unsafeCast<TextTrackKind>()\n\npublic inline val
TextTrackKind.Companion.CHAPTERS: TextTrackKind get() =
"chapters".asDynamic().unsafeCast<TextTrackKind>()\n\npublic inline val
TextTrackKind.Companion.METADATA: TextTrackKind get() =
"metadata".asDynamic().unsafeCast<TextTrackKind>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface SelectionMode
{\n\ncompanion object\n}\n\npublic inline val SelectionMode.Companion.SELECT: SelectionMode get() =
"select".asDynamic().unsafeCast<SelectionMode>()\n\npublic inline val SelectionMode.Companion.START:
SelectionMode get() = "start".asDynamic().unsafeCast<SelectionMode>()\n\npublic inline val
SelectionMode.Companion.END: SelectionMode get() =
"end".asDynamic().unsafeCast<SelectionMode>()\n\npublic inline val SelectionMode.Companion.PRESERVE:
SelectionMode get() = "preserve".asDynamic().unsafeCast<SelectionMode>()\n\n/* please, don't implement this
interface! *\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface
CanvasFillRule {\n\ncompanion object\n}\n\npublic inline val CanvasFillRule.Companion.NONZERO:
CanvasFillRule get() = "nonzero".asDynamic().unsafeCast<CanvasFillRule>()\n\npublic inline val
CanvasFillRule.Companion.EVENODD: CanvasFillRule get() =
"evenodd".asDynamic().unsafeCast<CanvasFillRule>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface

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ImageSmoothingQuality {\n  companion object\n}\n\npublic inline val ImageSmoothingQuality.Companion.LOW:
ImageSmoothingQuality get() = "low".asDynamic().unsafeCast<ImageSmoothingQuality>()\n\npublic inline val
ImageSmoothingQuality.Companion.MEDIUM: ImageSmoothingQuality get() =
"medium".asDynamic().unsafeCast<ImageSmoothingQuality>()\n\npublic inline val
ImageSmoothingQuality.Companion.HIGH: ImageSmoothingQuality get() =
"high".asDynamic().unsafeCast<ImageSmoothingQuality>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface CanvasLineCap
{\n  companion object\n}\n\npublic inline val CanvasLineCap.Companion.BUTT: CanvasLineCap get() =
"butt".asDynamic().unsafeCast<CanvasLineCap>()\n\npublic inline val CanvasLineCap.Companion.ROUND:
CanvasLineCap get() = "round".asDynamic().unsafeCast<CanvasLineCap>()\n\npublic inline val
CanvasLineCap.Companion.SQUARE: CanvasLineCap get() =
"square".asDynamic().unsafeCast<CanvasLineCap>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface CanvasLineJoin
{\n  companion object\n}\n\npublic inline val CanvasLineJoin.Companion.ROUND: CanvasLineJoin get() =
"round".asDynamic().unsafeCast<CanvasLineJoin>()\n\npublic inline val CanvasLineJoin.Companion.BEVEL:
CanvasLineJoin get() = "bevel".asDynamic().unsafeCast<CanvasLineJoin>()\n\npublic inline val
CanvasLineJoin.Companion.MITER: CanvasLineJoin get() =
"miter".asDynamic().unsafeCast<CanvasLineJoin>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface CanvasTextAlign
{\n  companion object\n}\n\npublic inline val CanvasTextAlign.Companion.START: CanvasTextAlign get() =
"start".asDynamic().unsafeCast<CanvasTextAlign>()\n\npublic inline val CanvasTextAlign.Companion.END:
CanvasTextAlign get() = "end".asDynamic().unsafeCast<CanvasTextAlign>()\n\npublic inline val
CanvasTextAlign.Companion.LEFT: CanvasTextAlign get() =
"left".asDynamic().unsafeCast<CanvasTextAlign>()\n\npublic inline val CanvasTextAlign.Companion.RIGHT:
CanvasTextAlign get() = "right".asDynamic().unsafeCast<CanvasTextAlign>()\n\npublic inline val
CanvasTextAlign.Companion.CENTER: CanvasTextAlign get() =
"center".asDynamic().unsafeCast<CanvasTextAlign>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface
CanvasTextBaseline {\n  companion object\n}\n\npublic inline val CanvasTextBaseline.Companion.TOP:
CanvasTextBaseline get() = "top".asDynamic().unsafeCast<CanvasTextBaseline>()\n\npublic inline val
CanvasTextBaseline.Companion.HANGING: CanvasTextBaseline get() =
"hanging".asDynamic().unsafeCast<CanvasTextBaseline>()\n\npublic inline val
CanvasTextBaseline.Companion.MIDDLE: CanvasTextBaseline get() =
"middle".asDynamic().unsafeCast<CanvasTextBaseline>()\n\npublic inline val
CanvasTextBaseline.Companion.ALPHABETIC: CanvasTextBaseline get() =
"alphabetic".asDynamic().unsafeCast<CanvasTextBaseline>()\n\npublic inline val
CanvasTextBaseline.Companion.IDEOGRAPHIC: CanvasTextBaseline get() =
"ideographic".asDynamic().unsafeCast<CanvasTextBaseline>()\n\npublic inline val
CanvasTextBaseline.Companion.BOTTOM: CanvasTextBaseline get() =
"bottom".asDynamic().unsafeCast<CanvasTextBaseline>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface CanvasDirection
{\n  companion object\n}\n\npublic inline val CanvasDirection.Companion.LTR: CanvasDirection get() =
"ltr".asDynamic().unsafeCast<CanvasDirection>()\n\npublic inline val CanvasDirection.Companion.RTL:
CanvasDirection get() = "rtl".asDynamic().unsafeCast<CanvasDirection>()\n\npublic inline val
CanvasDirection.Companion.INHERIT: CanvasDirection get() =
"inherit".asDynamic().unsafeCast<CanvasDirection>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface ScrollRestoration
{\n  companion object\n}\n\npublic inline val ScrollRestoration.Companion.AUTO: ScrollRestoration get() =

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"auto".asDynamic().unsafeCast<ScrollRestoration>()\n\npublic inline val
ScrollRestoration.Companion.MANUAL: ScrollRestoration get() =
"manual".asDynamic().unsafeCast<ScrollRestoration>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface ImageOrientation
{\n  companion object\n}\n\npublic inline val ImageOrientation.Companion.NONE: ImageOrientation get() =
"none".asDynamic().unsafeCast<ImageOrientation>()\n\npublic inline val ImageOrientation.Companion.FLIPY:
ImageOrientation get() = "flipY".asDynamic().unsafeCast<ImageOrientation>()\n\n/* please, don't implement this
interface! *\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface
PremultiplyAlpha {\n  companion object\n}\n\npublic inline val PremultiplyAlpha.Companion.NONE:
PremultiplyAlpha get() = "none".asDynamic().unsafeCast<PremultiplyAlpha>()\n\npublic inline val
PremultiplyAlpha.Companion.PREMULTIPLY: PremultiplyAlpha get() =
"premultiply".asDynamic().unsafeCast<PremultiplyAlpha>()\n\npublic inline val
PremultiplyAlpha.Companion.DEFAULT: PremultiplyAlpha get() =
"default".asDynamic().unsafeCast<PremultiplyAlpha>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface
ColorSpaceConversion {\n  companion object\n}\n\npublic inline val ColorSpaceConversion.Companion.NONE:
ColorSpaceConversion get() = "none".asDynamic().unsafeCast<ColorSpaceConversion>()\n\npublic inline val
ColorSpaceConversion.Companion.DEFAULT: ColorSpaceConversion get() =
"default".asDynamic().unsafeCast<ColorSpaceConversion>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface ResizeQuality
{\n  companion object\n}\n\npublic inline val ResizeQuality.Companion.PIXELATED: ResizeQuality get() =
"pixelated".asDynamic().unsafeCast<ResizeQuality>()\n\npublic inline val ResizeQuality.Companion.LOW:
ResizeQuality get() = "low".asDynamic().unsafeCast<ResizeQuality>()\n\npublic inline val
ResizeQuality.Companion.MEDIUM: ResizeQuality get() =
"medium".asDynamic().unsafeCast<ResizeQuality>()\n\npublic inline val ResizeQuality.Companion.HIGH:
ResizeQuality get() = "high".asDynamic().unsafeCast<ResizeQuality>()\n\n/* please, don't implement this
interface! *\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface
BinaryType {\n  companion object\n}\n\npublic inline val BinaryType.Companion.BLOB: BinaryType get() =
"blob".asDynamic().unsafeCast<BinaryType>()\n\npublic inline val BinaryType.Companion.ARRAYBUFFER:
BinaryType get() = "arraybuffer".asDynamic().unsafeCast<BinaryType>()\n\n/* please, don't implement this
interface! *\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface
WorkerType {\n  companion object\n}\n\npublic inline val WorkerType.Companion.CLASSIC: WorkerType get()
= "classic".asDynamic().unsafeCast<WorkerType>()\n\npublic inline val WorkerType.Companion.MODULE:
WorkerType get() = "module".asDynamic().unsafeCast<WorkerType>()\n\n/* please, don't implement this
interface! *\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface
ShadowRootMode {\n  companion object\n}\n\npublic inline val ShadowRootMode.Companion.OPEN:
ShadowRootMode get() = "open".asDynamic().unsafeCast<ShadowRootMode>()\n\npublic inline val
ShadowRootMode.Companion.CLOSED: ShadowRootMode get() =
"closed".asDynamic().unsafeCast<ShadowRootMode>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface ScrollBehavior
{\n  companion object\n}\n\npublic inline val ScrollBehavior.Companion.AUTO: ScrollBehavior get() =
"auto".asDynamic().unsafeCast<ScrollBehavior>()\n\npublic inline val ScrollBehavior.Companion.INSTANT:
ScrollBehavior get() = "instant".asDynamic().unsafeCast<ScrollBehavior>()\n\npublic inline val
ScrollBehavior.Companion.SMOOTH: ScrollBehavior get() =
"smooth".asDynamic().unsafeCast<ScrollBehavior>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface
ScrollLogicalPosition {\n  companion object\n}\n\npublic inline val ScrollLogicalPosition.Companion.START:
ScrollLogicalPosition get() = "start".asDynamic().unsafeCast<ScrollLogicalPosition>()\n\npublic inline val

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ScrollLogicalPosition.Companion.CENTER: ScrollLogicalPosition get() =
    \"center\".asDynamic().unsafeCast<ScrollLogicalPosition>()\n\npublic inline val
ScrollLogicalPosition.Companion.END: ScrollLogicalPosition get() =
    \"end\".asDynamic().unsafeCast<ScrollLogicalPosition>()\n\npublic inline val
ScrollLogicalPosition.Companion.NEAREST: ScrollLogicalPosition get() =
    \"nearest\".asDynamic().unsafeCast<ScrollLogicalPosition>()\n\n/* please, don't implement this interface!
*\n\n@Suppress(\"NESTED_CLASS_IN_EXTERNAL_INTERFACE\")\n\npublic external interface CSSBoxType {\n
    companion object\n}\n\npublic inline val CSSBoxType.Companion.MARGIN: CSSBoxType get() =
    \"margin\".asDynamic().unsafeCast<CSSBoxType>()\n\npublic inline val CSSBoxType.Companion.BORDER:
    CSSBoxType get() = \"border\".asDynamic().unsafeCast<CSSBoxType>()\n\npublic inline val
    CSSBoxType.Companion.PADDING: CSSBoxType get() =
    \"padding\".asDynamic().unsafeCast<CSSBoxType>()\n\npublic inline val CSSBoxType.Companion.CONTENT:
    CSSBoxType get() = \"content\".asDynamic().unsafeCast<CSSBoxType>()\", \"/*\n\n * Copyright 2010-2019 JetBrains
    s.r.o. and Kotlin Programming Language contributors.\n\n * Use of this source code is governed by the Apache 2.0
    license that can be found in the license/LICENSE.txt file.\n\n */\n\n// NOTE: THIS FILE IS AUTO-GENERATED,
    DO NOT EDIT!\n\n// See github.com/kotlin/dukat for details\n\n\npackage org.w3c.fetch\n\n\nimport kotlin.js.*\n\nimport
    org.khronos.webgl.*\n\nimport org.w3c.css.masking.*\n\nimport org.w3c.dom.*\n\nimport
    org.w3c.dom.clipboard.*\n\nimport org.w3c.dom.css.*\n\nimport org.w3c.dom.events.*\n\nimport
    org.w3c.dom.mediacapture.*\n\nimport org.w3c.dom.parsing.*\n\nimport org.w3c.dom.pointerevents.*\n\nimport
    org.w3c.dom.svg.*\n\nimport org.w3c.dom.url.*\n\nimport org.w3c.files.*\n\nimport org.w3c.notifications.*\n\nimport
    org.w3c.performance.*\n\nimport org.w3c.workers.*\n\nimport org.w3c.xhr.*\n\n\n/**\n\n * Exposes the JavaScript
    [Headers](https://developer.mozilla.org/en/docs/Web/API/Headers) to Kotlin\n\n */\n\npublic external open class
    Headers(init: dynamic = definedExternally) {\n
    fun append(name: String, value: String)\n
    fun delete(name: String)\n
    fun get(name: String): String?\n
    fun has(name: String): Boolean\n
    fun set(name: String, value: String)\n}\n\n\n/**\n\n * Exposes the JavaScript [Body](https://developer.mozilla.org/en/docs/Web/API/Body) to
    Kotlin\n\n */\n\npublic external interface Body {\n
    val bodyUsed: Boolean\n
    fun arrayBuffer():
    Promise<ArrayBuffer>\n
    fun blob(): Promise<Blob>\n
    fun formData(): Promise<FormData>\n
    fun json():
    Promise<Any?>\n
    fun text(): Promise<String>\n}\n\n\n/**\n\n * Exposes the JavaScript
    [Request](https://developer.mozilla.org/en/docs/Web/API/Request) to Kotlin\n\n */\n\npublic external open class
    Request(input: dynamic, init: RequestInit = definedExternally) : Body {\n
    open val method: String\n
    open val url: String\n
    open val headers: Headers\n
    open val type: RequestType\n
    open val destination:
    RequestDestination\n
    open val referrer: String\n
    open val referrerPolicy: dynamic\n
    open val mode:
    RequestMode\n
    open val credentials: RequestCredentials\n
    open val cache: RequestCache\n
    open val redirect:
    RequestRedirect\n
    open val integrity: String\n
    open val keepalive: Boolean\n
    override val bodyUsed:
    Boolean\n
    fun clone(): Request\n
    override fun arrayBuffer(): Promise<ArrayBuffer>\n
    override fun blob():
    Promise<Blob>\n
    override fun formData(): Promise<FormData>\n
    override fun json(): Promise<Any?>\n
    override fun text(): Promise<String>\n}\n\n\npublic external interface RequestInit {\n
    var method: String?\n
    get() = definedExternally\n
    set(value) = definedExternally\n
    var headers: dynamic\n
    get() =
    definedExternally\n
    set(value) = definedExternally\n
    var body: dynamic\n
    get() = definedExternally\n
    set(value) = definedExternally\n
    var referrer: String?\n
    get() = definedExternally\n
    set(value) =
    definedExternally\n
    var referrerPolicy: dynamic\n
    get() = definedExternally\n
    set(value) =
    definedExternally\n
    var mode: RequestMode?\n
    get() = definedExternally\n
    set(value) =
    definedExternally\n
    var credentials: RequestCredentials?\n
    get() = definedExternally\n
    set(value) =
    definedExternally\n
    var cache: RequestCache?\n
    get() = definedExternally\n
    set(value) =
    definedExternally\n
    var redirect: RequestRedirect?\n
    get() = definedExternally\n
    set(value) =
    definedExternally\n
    var integrity: String?\n
    get() = definedExternally\n
    set(value) = definedExternally\n
    var keepalive: Boolean?\n
    get() = definedExternally\n
    set(value) = definedExternally\n
    var window:
    Any?\n
    get() = definedExternally\n
    set(value) =

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definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun RequestInit(method: String? = undefined,
headers: dynamic = undefined, body: dynamic = undefined, referrer: String? = undefined, referrerPolicy: dynamic =
undefined, mode: RequestMode? = undefined, credentials: RequestCredentials? = undefined, cache: RequestCache?
= undefined, redirect: RequestRedirect? = undefined, integrity: String? = undefined, keepalive: Boolean? =
undefined, window: Any? = undefined): RequestInit {\n    val o = js("{}")\n    o["method"] = method\n    o["headers"] = headers\n    o["body"] = body\n    o["referrer"] = referrer\n    o["referrerPolicy"] =
referrerPolicy\n    o["mode"] = mode\n    o["credentials"] = credentials\n    o["cache"] = cache\n    o["redirect"]
= redirect\n    o["integrity"] = integrity\n    o["keepalive"] = keepalive\n    o["window"] = window\n    return
o\n}\n\n/**\n * Exposes the JavaScript [Response](https://developer.mozilla.org/en/docs/Web/API/Response) to
Kotlin\n */\n\npublic external open class Response(body: dynamic = definedExternally, init: ResponseInit =
definedExternally) : Body {\n    open val type: ResponseType\n    open val url: String\n    open val redirected:
Boolean\n    open val status: Short\n    open val ok: Boolean\n    open val statusText: String\n    open val headers:
Headers\n    open val body: dynamic\n    open val trailer: Promise<Headers>\n    override val bodyUsed: Boolean\n
fun clone(): Response\n    override fun arrayBuffer(): Promise<ArrayBuffer>\n    override fun blob():
Promise<Blob>\n    override fun formData(): Promise<FormData>\n    override fun json(): Promise<Any?>\n
override fun text(): Promise<String>\n\n    companion object {\n        fun error(): Response\n        fun redirect(url:
String, status: Short = definedExternally): Response\n    }\n}\n\npublic external interface ResponseInit {\n    var
status: Short? /* = 200 */\n        get() = definedExternally\n        set(value) = definedExternally\n    var statusText:
String? /* = "OK" */\n        get() = definedExternally\n        set(value) = definedExternally\n    var headers:
dynamic\n        get() = definedExternally\n        set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun ResponseInit(status: Short? = 200,
statusText: String? = "OK", headers: dynamic = undefined): ResponseInit {\n    val o = js("{}")\n    o["status"]
= status\n    o["statusText"] = statusText\n    o["headers"] = headers\n    return o\n}\n\n/* please, don't implement
this interface! */\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\npublic external interface
RequestType {\n    companion object\n}\n\npublic inline val RequestType.Companion.EMPTY: RequestType get()
= ""\n\n.asDynamic().unsafeCast<RequestType>()\n\npublic inline val RequestType.Companion.AUDIO:
RequestType get() = "audio"\n\n.asDynamic().unsafeCast<RequestType>()\n\npublic inline val
RequestType.Companion.FONT: RequestType get() = "font"\n\n.asDynamic().unsafeCast<RequestType>()\n\npublic
inline val RequestType.Companion.IMAGE: RequestType get() =
"image"\n\n.asDynamic().unsafeCast<RequestType>()\n\npublic inline val RequestType.Companion.SCRIPT:
RequestType get() = "script"\n\n.asDynamic().unsafeCast<RequestType>()\n\npublic inline val
RequestType.Companion.STYLE: RequestType get() =
"style"\n\n.asDynamic().unsafeCast<RequestType>()\n\npublic inline val RequestType.Companion.TRACK:
RequestType get() = "track"\n\n.asDynamic().unsafeCast<RequestType>()\n\npublic inline val
RequestType.Companion.VIDEO: RequestType get() = "video"\n\n.asDynamic().unsafeCast<RequestType>()\n\n/*
please, don't implement this interface! */\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\npublic external interface
RequestDestination {\n    companion object\n}\n\npublic inline val RequestDestination.Companion.EMPTY:
RequestDestination get() = ""\n\n.asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.DOCUMENT: RequestDestination get() =
"document"\n\n.asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.EMBED: RequestDestination get() =
"embed"\n\n.asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.FONT: RequestDestination get() =
"font"\n\n.asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.IMAGE: RequestDestination get() =
"image"\n\n.asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.MANIFEST: RequestDestination get() =

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"manifest".asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.MEDIA: RequestDestination get() =
"media".asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.OBJECT: RequestDestination get() =
"object".asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.REPORT: RequestDestination get() =
"report".asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.SCRIPT: RequestDestination get() =
"script".asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.SERVICEWORKER: RequestDestination get() =
"serviceworker".asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.SHAREDWORKER: RequestDestination get() =
"sharedworker".asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.STYLE: RequestDestination get() =
"style".asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.WORKER: RequestDestination get() =
"worker".asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.XSLT: RequestDestination get() =
"xslt".asDynamic().unsafeCast<RequestDestination>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface RequestMode {\n
    companion object\n}\n\npublic inline val RequestMode.Companion.NAVIGATE: RequestMode get() =
"navigate".asDynamic().unsafeCast<RequestMode>()\n\npublic inline val
RequestMode.Companion.SAME_ORIGIN: RequestMode get() = "same-
origin".asDynamic().unsafeCast<RequestMode>()\n\npublic inline val RequestMode.Companion.NO_CORS:
RequestMode get() = "no-cors".asDynamic().unsafeCast<RequestMode>()\n\npublic inline val
RequestMode.Companion.CORS: RequestMode get() = "cors".asDynamic().unsafeCast<RequestMode>()\n\n/*
please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface
RequestCredentials {\n
    companion object\n}\n\npublic inline val RequestCredentials.Companion.OMIT:
RequestCredentials get() = "omit".asDynamic().unsafeCast<RequestCredentials>()\n\npublic inline val
RequestCredentials.Companion.SAME_ORIGIN: RequestCredentials get() = "same-
origin".asDynamic().unsafeCast<RequestCredentials>()\n\npublic inline val
RequestCredentials.Companion.INCLUDE: RequestCredentials get() =
"include".asDynamic().unsafeCast<RequestCredentials>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface RequestCache
{\n
    companion object\n}\n\npublic inline val RequestCache.Companion.DEFAULT: RequestCache get() =
"default".asDynamic().unsafeCast<RequestCache>()\n\npublic inline val RequestCache.Companion.NO_STORE:
RequestCache get() = "no-store".asDynamic().unsafeCast<RequestCache>()\n\npublic inline val
RequestCache.Companion.RELOAD: RequestCache get() =
"reload".asDynamic().unsafeCast<RequestCache>()\n\npublic inline val RequestCache.Companion.NO_CACHE:
RequestCache get() = "no-cache".asDynamic().unsafeCast<RequestCache>()\n\npublic inline val
RequestCache.Companion.FORCE_CACHE: RequestCache get() = "force-
cache".asDynamic().unsafeCast<RequestCache>()\n\npublic inline val
RequestCache.Companion.ONLY_IF_CACHED: RequestCache get() = "only-if-
cached".asDynamic().unsafeCast<RequestCache>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface RequestRedirect
{\n
    companion object\n}\n\npublic inline val RequestRedirect.Companion.FOLLOW: RequestRedirect get() =
"follow".asDynamic().unsafeCast<RequestRedirect>()\n\npublic inline val RequestRedirect.Companion.ERROR:

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RequestRedirect get() = "error".asDynamic().unsafeCast<RequestRedirect>()\n\npublic inline val
RequestRedirect.Companion.MANUAL: RequestRedirect get() =
"manual".asDynamic().unsafeCast<RequestRedirect>()\n\n/* please, don't implement this interface!
*\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface ResponseType
{\n  companion object\n}\n\npublic inline val ResponseType.Companion.BASIC: ResponseType get() =
"basic".asDynamic().unsafeCast<ResponseType>()\n\npublic inline val ResponseType.Companion.CORS:
ResponseType get() = "cors".asDynamic().unsafeCast<ResponseType>()\n\npublic inline val
ResponseType.Companion.DEFAULT: ResponseType get() =
"default".asDynamic().unsafeCast<ResponseType>()\n\npublic inline val ResponseType.Companion.ERROR:
ResponseType get() = "error".asDynamic().unsafeCast<ResponseType>()\n\npublic inline val
ResponseType.Companion.OPAQUE: ResponseType get() =
"opaque".asDynamic().unsafeCast<ResponseType>()\n\npublic inline val
ResponseType.Companion.OPAQUEREDIRECT: ResponseType get() =
"opaqueredirect".asDynamic().unsafeCast<ResponseType>()", /*\n * Copyright 2010-2019 JetBrains s.r.o. and
Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that
can be found in the license/LICENSE.txt file.\n */\n\n// NOTE: THIS FILE IS AUTO-GENERATED, DO NOT
EDIT!\n\n See github.com/kotlin/dukat for details\n\npackage org.w3c.dom.mediacapture\n\nimport
kotlin.js.*\nimport org.khronos.webgl.*\nimport org.w3c.css.masking.*\nimport org.w3c.dom.*\nimport
org.w3c.dom.clipboard.*\nimport org.w3c.dom.css.*\nimport org.w3c.dom.events.*\nimport
org.w3c.dom.parsing.*\nimport org.w3c.dom.pointerevents.*\nimport org.w3c.dom.svg.*\nimport
org.w3c.dom.url.*\nimport org.w3c.fetch.*\nimport org.w3c.files.*\nimport org.w3c.notifications.*\nimport
org.w3c.performance.*\nimport org.w3c.workers.*\nimport org.w3c.xhr.*\n\n/**\n * Exposes the JavaScript
[MediaStream](https://developer.mozilla.org/en/docs/Web/API/MediaStream) to Kotlin\n */\n\npublic external open
class MediaStream() : EventTarget {\n  constructor(stream: MediaStream)\n  constructor(tracks:
Array<MediaStreamTrack>)\n  open val id: String\n  open val active: Boolean\n  var onaddtrack:
((MediaStreamTrackEvent) -> dynamic)?\n  var onremovetrack: ((MediaStreamTrackEvent) -> dynamic)?\n  fun
getAudioTracks(): Array<MediaStreamTrack>\n  fun getVideoTracks(): Array<MediaStreamTrack>\n  fun
getTracks(): Array<MediaStreamTrack>\n  fun getTrackById(trackId: String): MediaStreamTrack?\n  fun
addTrack(track: MediaStreamTrack)\n  fun removeTrack(track: MediaStreamTrack)\n  fun clone():
MediaStream\n}\n\n/**\n * Exposes the JavaScript
[MediaStreamTrack](https://developer.mozilla.org/en/docs/Web/API/MediaStreamTrack) to Kotlin\n */\n\npublic
external abstract class MediaStreamTrack : EventTarget {\n  open val kind: String\n  open val id: String\n  open
val label: String\n  open var enabled: Boolean\n  open val muted: Boolean\n  open var onmute: ((Event) ->
dynamic)?\n  open var onunmute: ((Event) -> dynamic)?\n  open val readyState: MediaStreamTrackState\n
open var onended: ((Event) -> dynamic)?\n  open var onoverconstrained: ((Event) -> dynamic)?\n  fun clone():
MediaStreamTrack\n  fun stop()\n  fun getCapabilities(): MediaTrackCapabilities\n  fun getConstraints():
MediaTrackConstraints\n  fun getSettings(): MediaTrackSettings\n  fun applyConstraints(constraints:
MediaTrackConstraints = definedExternally): Promise<Unit>\n}\n\n/**\n * Exposes the JavaScript
[MediaTrackSupportedConstraints](https://developer.mozilla.org/en/docs/Web/API/MediaTrackSupportedConstrain
ts) to Kotlin\n */\n\npublic external interface MediaTrackSupportedConstraints {\n  var width: Boolean? /* = true
*/\n  get() = definedExternally\n  set(value) = definedExternally\n  var height: Boolean? /* = true */\n
get() = definedExternally\n  set(value) = definedExternally\n  var aspectRatio: Boolean? /* = true */\n  get()
= definedExternally\n  set(value) = definedExternally\n  var frameRate: Boolean? /* = true */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var facingMode: Boolean? /* = true */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var resizeMode: Boolean? /* = true */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var volume: Boolean? /* = true */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var sampleRate: Boolean? /* = true */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var sampleSize: Boolean? /* = true */\n  get() =

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definedExternally\n    set(value) = definedExternally\n    var echoCancellation: Boolean? /* = true */\n    get()
= definedExternally\n    set(value) = definedExternally\n    var autoGainControl: Boolean? /* = true */\n    get()
= definedExternally\n    set(value) = definedExternally\n    var noiseSuppression: Boolean? /* = true */\n
get() = definedExternally\n    set(value) = definedExternally\n    var latency: Boolean? /* = true */\n    get() =
definedExternally\n    set(value) = definedExternally\n    var channelCount: Boolean? /* = true */\n    get() =
definedExternally\n    set(value) = definedExternally\n    var deviceId: Boolean? /* = true */\n    get() =
definedExternally\n    set(value) = definedExternally\n    var groupId: Boolean? /* = true */\n    get() =
definedExternally\n    set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
MediaTrackSupportedConstraints(width: Boolean? = true, height: Boolean? = true, aspectRatio: Boolean? = true,
frameRate: Boolean? = true, facingMode: Boolean? = true, resizeMode: Boolean? = true, volume: Boolean? = true,
sampleRate: Boolean? = true, sampleSize: Boolean? = true, echoCancellation: Boolean? = true, autoGainControl:
Boolean? = true, noiseSuppression: Boolean? = true, latency: Boolean? = true, channelCount: Boolean? = true,
deviceId: Boolean? = true, groupId: Boolean? = true): MediaTrackSupportedConstraints {\n    val o = js("{}")\n
o["width"] = width\n    o["height"] = height\n    o["aspectRatio"] = aspectRatio\n    o["frameRate"] =
frameRate\n    o["facingMode"] = facingMode\n    o["resizeMode"] = resizeMode\n    o["volume"] = volume\n
o["sampleRate"] = sampleRate\n    o["sampleSize"] = sampleSize\n    o["echoCancellation"] =
echoCancellation\n    o["autoGainControl"] = autoGainControl\n    o["noiseSuppression"] = noiseSuppression\n
o["latency"] = latency\n    o["channelCount"] = channelCount\n    o["deviceId"] = deviceId\n    o["groupId"] =
groupId\n    return o\n}\n\npublic external interface MediaTrackCapabilities {\n    var width: ULongRange?\n
get() = definedExternally\n    set(value) = definedExternally\n    var height: ULongRange?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var aspectRatio: DoubleRange?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var frameRate: DoubleRange?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var facingMode: Array<String>?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var resizeMode: Array<String>?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var volume: DoubleRange?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var sampleRate: ULongRange?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var sampleSize: ULongRange?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var echoCancellation: Array<Boolean>?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var autoGainControl: Array<Boolean>?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var noiseSuppression: Array<Boolean>?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var latency: DoubleRange?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var channelCount: ULongRange?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var deviceId: String?\n    get() = definedExternally\n
set(value) = definedExternally\n    var groupId: String?\n    get() = definedExternally\n    set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun MediaTrackCapabilities(width:
ULongRange? = undefined, height: ULongRange? = undefined, aspectRatio: DoubleRange? = undefined,
frameRate: DoubleRange? = undefined, facingMode: Array<String>? = undefined, resizeMode: Array<String>? =
undefined, volume: DoubleRange? = undefined, sampleRate: ULongRange? = undefined, sampleSize:
ULongRange? = undefined, echoCancellation: Array<Boolean>? = undefined, autoGainControl: Array<Boolean>?
= undefined, noiseSuppression: Array<Boolean>? = undefined, latency: DoubleRange? = undefined, channelCount:
ULongRange? = undefined, deviceId: String? = undefined, groupId: String? = undefined): MediaTrackCapabilities
{\n    val o = js("{}")\n    o["width"] = width\n    o["height"] = height\n    o["aspectRatio"] = aspectRatio\n
o["frameRate"] = frameRate\n    o["facingMode"] = facingMode\n    o["resizeMode"] = resizeMode\n
o["volume"] = volume\n    o["sampleRate"] = sampleRate\n    o["sampleSize"] = sampleSize\n
o["echoCancellation"] = echoCancellation\n    o["autoGainControl"] = autoGainControl\n
o["noiseSuppression"] = noiseSuppression\n    o["latency"] = latency\n    o["channelCount"] = channelCount\n
o["deviceId"] = deviceId\n    o["groupId"] = groupId\n    return o\n}\n\n**\n * Exposes the JavaScript
[MediaTrackConstraints](https://developer.mozilla.org/en/docs/Web/API/MediaTrackConstraints) to Kotlin\n

```



```

*\npublic external interface MediaTrackConstraints : MediaTrackConstraintSet {\n  var advanced:
Array<MediaTrackConstraintSet>?\n  get() = definedExternally\n  set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun MediaTrackConstraints(advanced:
Array<MediaTrackConstraintSet>? = undefined, width: dynamic = undefined, height: dynamic = undefined,
aspectRatio: dynamic = undefined, frameRate: dynamic = undefined, facingMode: dynamic = undefined,
resizeMode: dynamic = undefined, volume: dynamic = undefined, sampleRate: dynamic = undefined, sampleSize:
dynamic = undefined, echoCancellation: dynamic = undefined, autoGainControl: dynamic = undefined,
noiseSuppression: dynamic = undefined, latency: dynamic = undefined, channelCount: dynamic = undefined,
deviceId: dynamic = undefined, groupId: dynamic = undefined): MediaTrackConstraints {\n  val o = js("{}")\n
o["advanced"] = advanced\n  o["width"] = width\n  o["height"] = height\n  o["aspectRatio"] =
aspectRatio\n  o["frameRate"] = frameRate\n  o["facingMode"] = facingMode\n  o["resizeMode"] =
resizeMode\n  o["volume"] = volume\n  o["sampleRate"] = sampleRate\n  o["sampleSize"] = sampleSize\n
o["echoCancellation"] = echoCancellation\n  o["autoGainControl"] = autoGainControl\n
o["noiseSuppression"] = noiseSuppression\n  o["latency"] = latency\n  o["channelCount"] = channelCount\n
o["deviceId"] = deviceId\n  o["groupId"] = groupId\n  return o\n}\n\npublic external interface
MediaTrackConstraintSet {\n  var width: dynamic\n  get() = definedExternally\n  set(value) =
definedExternally\n  var height: dynamic\n  get() = definedExternally\n  set(value) = definedExternally\n
var aspectRatio: dynamic\n  get() = definedExternally\n  set(value) = definedExternally\n  var frameRate:
dynamic\n  get() = definedExternally\n  set(value) = definedExternally\n  var facingMode: dynamic\n
get() = definedExternally\n  set(value) = definedExternally\n  var resizeMode: dynamic\n  get() =
definedExternally\n  set(value) = definedExternally\n  var volume: dynamic\n  get() = definedExternally\n
set(value) = definedExternally\n  var sampleRate: dynamic\n  get() = definedExternally\n  set(value) =
definedExternally\n  var sampleSize: dynamic\n  get() = definedExternally\n  set(value) =
definedExternally\n  var echoCancellation: dynamic\n  get() = definedExternally\n  set(value) =
definedExternally\n  var autoGainControl: dynamic\n  get() = definedExternally\n  set(value) =
definedExternally\n  var noiseSuppression: dynamic\n  get() = definedExternally\n  set(value) =
definedExternally\n  var latency: dynamic\n  get() = definedExternally\n  set(value) = definedExternally\n
var channelCount: dynamic\n  get() = definedExternally\n  set(value) = definedExternally\n  var deviceId:
dynamic\n  get() = definedExternally\n  set(value) = definedExternally\n  var groupId: dynamic\n  get()
= definedExternally\n  set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
MediaTrackConstraintSet(width: dynamic = undefined, height: dynamic = undefined, aspectRatio: dynamic =
undefined, frameRate: dynamic = undefined, facingMode: dynamic = undefined, resizeMode: dynamic = undefined,
volume: dynamic = undefined, sampleRate: dynamic = undefined, sampleSize: dynamic = undefined,
echoCancellation: dynamic = undefined, autoGainControl: dynamic = undefined, noiseSuppression: dynamic =
undefined, latency: dynamic = undefined, channelCount: dynamic = undefined, deviceId: dynamic = undefined,
groupId: dynamic = undefined): MediaTrackConstraintSet {\n  val o = js("{}")\n  o["width"] = width\n
o["height"] = height\n  o["aspectRatio"] = aspectRatio\n  o["frameRate"] = frameRate\n  o["facingMode"]
= facingMode\n  o["resizeMode"] = resizeMode\n  o["volume"] = volume\n  o["sampleRate"] =
sampleRate\n  o["sampleSize"] = sampleSize\n  o["echoCancellation"] = echoCancellation\n
o["autoGainControl"] = autoGainControl\n  o["noiseSuppression"] = noiseSuppression\n  o["latency"] =
latency\n  o["channelCount"] = channelCount\n  o["deviceId"] = deviceId\n  o["groupId"] = groupId\n
return o\n}\n\n/**\n * Exposes the JavaScript
[MediaTrackSettings](https://developer.mozilla.org/en/docs/Web/API/MediaTrackSettings) to Kotlin\n
*\npublic external interface MediaTrackSettings {\n  var width: Int?\n  get() = definedExternally\n  set(value) =
definedExternally\n  var height: Int?\n  get() = definedExternally\n  set(value) = definedExternally\n  var
aspectRatio: Double?\n  get() = definedExternally\n  set(value) = definedExternally\n  var frameRate:
Double?\n  get() = definedExternally\n  set(value) = definedExternally\n  var facingMode: String?\n
get() = definedExternally\n  set(value) = definedExternally\n  var resizeMode: String?\n  get() =

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definedExternally\n    set(value) = definedExternally\n    var volume: Double?\n    get() = definedExternally\n
    set(value) = definedExternally\n    var sampleRate: Int?\n    get() = definedExternally\n    set(value) =
definedExternally\n    var sampleSize: Int?\n    get() = definedExternally\n    set(value) = definedExternally\n
var echoCancellation: Boolean?\n    get() = definedExternally\n    set(value) = definedExternally\n    var
autoGainControl: Boolean?\n    get() = definedExternally\n    set(value) = definedExternally\n    var
noiseSuppression: Boolean?\n    get() = definedExternally\n    set(value) = definedExternally\n    var latency:
Double?\n    get() = definedExternally\n    set(value) = definedExternally\n    var channelCount: Int?\n
get() = definedExternally\n    set(value) = definedExternally\n    var deviceId: String?\n    get() =
definedExternally\n    set(value) = definedExternally\n    var groupId: String?\n    get() = definedExternally\n
    set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun MediaTrackSettings(width:
Int? = undefined, height: Int? = undefined, aspectRatio: Double? = undefined, frameRate: Double? = undefined,
facingMode: String? = undefined, resizeMode: String? = undefined, volume: Double? = undefined, sampleRate: Int?
= undefined, sampleSize: Int? = undefined, echoCancellation: Boolean? = undefined, autoGainControl: Boolean? =
undefined, noiseSuppression: Boolean? = undefined, latency: Double? = undefined, channelCount: Int? = undefined,
deviceId: String? = undefined, groupId: String? = undefined): MediaTrackSettings {\n    val o = js("{}")\n
o["width"] = width\n    o["height"] = height\n    o["aspectRatio"] = aspectRatio\n    o["frameRate"] =
frameRate\n    o["facingMode"] = facingMode\n    o["resizeMode"] = resizeMode\n    o["volume"] = volume\n
o["sampleRate"] = sampleRate\n    o["sampleSize"] = sampleSize\n    o["echoCancellation"] =
echoCancellation\n    o["autoGainControl"] = autoGainControl\n    o["noiseSuppression"] = noiseSuppression\n
o["latency"] = latency\n    o["channelCount"] = channelCount\n    o["deviceId"] = deviceId\n    o["groupId"] =
groupId\n    return o\n}\n\n/**\n * Exposes the JavaScript
[MediaStreamTrackEvent](https://developer.mozilla.org/en/docs/Web/API/MediaStreamTrackEvent) to Kotlin\n
*/\npublic external open class MediaStreamTrackEvent(type: String, eventInitDict: MediaStreamTrackEventInit) :
Event {\n    open val track: MediaStreamTrack\n\n    companion object {\n        val NONE: Short\n        val
CAPTURING_PHASE: Short\n        val AT_TARGET: Short\n        val BUBBLING_PHASE: Short\n
    }\n\n    public external interface MediaStreamTrackEventInit : EventInit {\n        var track: MediaStreamTrack?\n
get() = definedExternally\n        set(value) = definedExternally\n    }\n\n    @kotlin.internal.InlineOnly\n    public inline fun
MediaStreamTrackEventInit(track: MediaStreamTrack?, bubbles: Boolean? = false, cancelable: Boolean? = false,
composed: Boolean? = false): MediaStreamTrackEventInit {\n        val o = js("{}")\n        o["track"] = track\n
o["bubbles"] = bubbles\n        o["cancelable"] = cancelable\n        o["composed"] = composed\n        return
o\n    }\n\n    public external open class OverconstrainedErrorEvent(type: String, eventInitDict:
OverconstrainedErrorEventInit) : Event {\n        open val error: dynamic\n\n        companion object {\n            val NONE:
Short\n            val CAPTURING_PHASE: Short\n            val AT_TARGET: Short\n            val BUBBLING_PHASE:
Short\n        }\n\n        public external interface OverconstrainedErrorEventInit : EventInit {\n            var error: dynamic /*
= null */\n            get() = definedExternally\n            set(value) =
definedExternally\n        }\n\n        @kotlin.internal.InlineOnly\n        public inline fun OverconstrainedErrorEventInit(error:
dynamic = null, bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? = false):
OverconstrainedErrorEventInit {\n            val o = js("{}")\n            o["error"] = error\n            o["bubbles"] = bubbles\n
o["cancelable"] = cancelable\n            o["composed"] = composed\n            return o\n        }\n\n        /**\n         * Exposes the JavaScript
[MediaDevices](https://developer.mozilla.org/en/docs/Web/API/MediaDevices) to Kotlin\n         */\n        public external
abstract class MediaDevices : EventTarget {\n            open var ondevicechange: ((Event) -> dynamic)?\n            fun
enumerateDevices(): Promise<Array<MediaDeviceInfo>>\n            fun getSupportedConstraints():
MediaTrackSupportedConstraints\n            fun getUserMedia(constraints: MediaStreamConstraints = definedExternally):
Promise<MediaStream>\n        }\n\n        /**\n         * Exposes the JavaScript
[MediaDeviceInfo](https://developer.mozilla.org/en/docs/Web/API/MediaDeviceInfo) to Kotlin\n         */\n        public
external abstract class MediaDeviceInfo {\n            open val deviceId: String\n            open val kind: MediaDeviceKind\n
            open val label: String\n            open val groupId: String\n            fun toJSON(): dynamic\n        }\n\n        public external abstract class
InputDeviceInfo : MediaDeviceInfo {\n            fun getCapabilities(): MediaTrackCapabilities\n        }\n\n        /**\n         * Exposes the

```

JavaScript [MediaStreamConstraints](https://developer.mozilla.org/en/docs/Web/API/MediaStreamConstraints) to Kotlin\n \*\\npublic external interface MediaStreamConstraints {\n var video: dynamic /\* = false \*/\n get() = definedExternally\n set(value) = definedExternally\n var audio: dynamic /\* = false \*/\n get() = definedExternally\n set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun MediaStreamConstraints(video: dynamic = false, audio: dynamic = false): MediaStreamConstraints {\n val o = js("{}")\n o["video"] = video\n o["audio"] = audio\n return o\n}\n\npublic external interface ConstrainingPattern {\n var onoverconstrained: ((Event) -> dynamic)?\n get() = definedExternally\n set(value) = definedExternally\n fun getCapabilities(): Capabilities\n fun getConstraints(): Constraints\n fun getSettings(): Settings\n fun applyConstraints(constraints: Constraints = definedExternally): Promise<Unit>\n}\n\n/\*\*\n \* Exposes the JavaScript

[DoubleRange](https://developer.mozilla.org/en/docs/Web/API/DoubleRange) to Kotlin\n \*\\npublic external interface DoubleRange {\n var max: Double?\n get() = definedExternally\n set(value) = definedExternally\n var min: Double?\n get() = definedExternally\n set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun DoubleRange(max: Double? = undefined, min: Double? = undefined): DoubleRange {\n val o = js("{}")\n o["max"] = max\n o["min"] = min\n return o\n}\n\npublic external interface ConstrainDoubleRange : DoubleRange {\n var exact: Double?\n get() = definedExternally\n set(value) = definedExternally\n var ideal: Double?\n get() = definedExternally\n set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun ConstrainDoubleRange(exact: Double? = undefined, ideal: Double? = undefined, max: Double? = undefined, min: Double? = undefined): ConstrainDoubleRange {\n val o = js("{}")\n o["exact"] = exact\n o["ideal"] = ideal\n o["max"] = max\n o["min"] = min\n return o\n}\n\npublic external interface ULongRange {\n var max: Int?\n get() = definedExternally\n set(value) = definedExternally\n var min: Int?\n get() = definedExternally\n set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun ULongRange(max: Int? = undefined, min: Int? = undefined): ULongRange {\n val o = js("{}")\n o["max"] = max\n o["min"] = min\n return o\n}\n\npublic external interface ConstrainULongRange : ULongRange {\n var exact: Int?\n get() = definedExternally\n set(value) = definedExternally\n var ideal: Int?\n get() = definedExternally\n set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun ConstrainULongRange(exact: Int? = undefined, ideal: Int? = undefined, max: Int? = undefined, min: Int? = undefined): ConstrainULongRange {\n val o = js("{}")\n o["exact"] = exact\n o["ideal"] = ideal\n o["max"] = max\n o["min"] = min\n return o\n}\n\n/\*\*\n \* Exposes the JavaScript

[ConstrainBooleanParameters](https://developer.mozilla.org/en/docs/Web/API/ConstrainBooleanParameters) to Kotlin\n \*\\npublic external interface ConstrainBooleanParameters {\n var exact: Boolean?\n get() = definedExternally\n set(value) = definedExternally\n var ideal: Boolean?\n get() = definedExternally\n set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun ConstrainBooleanParameters(exact: Boolean? = undefined, ideal: Boolean? = undefined): ConstrainBooleanParameters {\n val o = js("{}")\n o["exact"] = exact\n o["ideal"] = ideal\n return o\n}\n\n/\*\*\n \* Exposes the JavaScript

[ConstrainDOMStringParameters](https://developer.mozilla.org/en/docs/Web/API/ConstrainDOMStringParameters) to Kotlin\n \*\\npublic external interface ConstrainDOMStringParameters {\n var exact: dynamic\n get() = definedExternally\n set(value) = definedExternally\n var ideal: dynamic\n get() = definedExternally\n set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun ConstrainDOMStringParameters(exact: dynamic = undefined, ideal: dynamic = undefined): ConstrainDOMStringParameters {\n val o = js("{}")\n o["exact"] = exact\n o["ideal"] = ideal\n return o\n}\n\npublic external interface Capabilities\n@kotlin.internal.InlineOnly\npublic inline fun Capabilities(): Capabilities {\n val o = js("{}")\n return o\n}\n\npublic external interface Settings\n@kotlin.internal.InlineOnly\npublic inline fun Settings(): Settings {\n val o = js("{}")\n return o\n}\n\npublic external interface ConstraintSet\n@kotlin.internal.InlineOnly\npublic inline fun ConstraintSet(): ConstraintSet {\n val o = js("{}")\n return o\n}\n\npublic external interface Constraints : ConstraintSet {\n

```

var advanced: Array<ConstraintSet>? \n    get() = definedExternally \n    set(value) =
definedExternally \n} \n \n @kotlin.internal.InlineOnly \n public inline fun Constraints(advanced:
Array<ConstraintSet>? = undefined): Constraints { \n    val o = js("{}") \n    o["advanced"] = advanced \n
return o \n} \n \n /* please, don't implement this interface!
*\n @Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE") \n public external interface
MediaStreamTrackState { \n    companion object \n} \n \n public inline val MediaStreamTrackState.Companion.LIVE:
MediaStreamTrackState get() = "live".asDynamic().unsafeCast<MediaStreamTrackState>() \n \n public inline val
MediaStreamTrackState.Companion.ENDED: MediaStreamTrackState get() =
"ended".asDynamic().unsafeCast<MediaStreamTrackState>() \n \n /* please, don't implement this interface!
*\n @Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE") \n public external interface
VideoFacingModeEnum { \n    companion object \n} \n \n public inline val
VideoFacingModeEnum.Companion.USER: VideoFacingModeEnum get() =
"user".asDynamic().unsafeCast<VideoFacingModeEnum>() \n \n public inline val
VideoFacingModeEnum.Companion.ENVIRONMENT: VideoFacingModeEnum get() =
"environment".asDynamic().unsafeCast<VideoFacingModeEnum>() \n \n public inline val
VideoFacingModeEnum.Companion.LEFT: VideoFacingModeEnum get() =
"left".asDynamic().unsafeCast<VideoFacingModeEnum>() \n \n public inline val
VideoFacingModeEnum.Companion.RIGHT: VideoFacingModeEnum get() =
"right".asDynamic().unsafeCast<VideoFacingModeEnum>() \n \n /* please, don't implement this interface!
*\n @Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE") \n public external interface
VideoResizeModeEnum { \n    companion object \n} \n \n public inline val
VideoResizeModeEnum.Companion.NONE: VideoResizeModeEnum get() =
"none".asDynamic().unsafeCast<VideoResizeModeEnum>() \n \n public inline val
VideoResizeModeEnum.Companion.CROP_AND_SCALE: VideoResizeModeEnum get() = "crop-and-
scale".asDynamic().unsafeCast<VideoResizeModeEnum>() \n \n /* please, don't implement this interface!
*\n @Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE") \n public external interface
MediaDeviceKind { \n    companion object \n} \n \n public inline val MediaDeviceKind.Companion.AUDIOINPUT:
MediaDeviceKind get() = "audioinput".asDynamic().unsafeCast<MediaDeviceKind>() \n \n public inline val
MediaDeviceKind.Companion.AUDIOOUTPUT: MediaDeviceKind get() =
"audiooutput".asDynamic().unsafeCast<MediaDeviceKind>() \n \n public inline val
MediaDeviceKind.Companion.VIDEOINPUT: MediaDeviceKind get() =
"videoinput".asDynamic().unsafeCast<MediaDeviceKind>() \n \n /* \n * Copyright 2010-2019 JetBrains s.r.o. and
Kotlin Programming Language contributors. \n * Use of this source code is governed by the Apache 2.0 license that
can be found in the license/LICENSE.txt file. \n * \n \n // NOTE: THIS FILE IS AUTO-GENERATED, DO NOT
EDIT! \n // See github.com/kotlin/dukat for details \n \n package org.w3c.dom.pointerevents \n \n import
kotlin.js.* \n import org.khronos.webgl.* \n import org.w3c.css.masking.* \n import org.w3c.dom.* \n import
org.w3c.dom.clipboard.* \n import org.w3c.dom.css.* \n import org.w3c.dom.events.* \n import
org.w3c.dom.mediacapture.* \n import org.w3c.dom.parsing.* \n import org.w3c.dom.svg.* \n import
org.w3c.dom.url.* \n import org.w3c.fetch.* \n import org.w3c.files.* \n import org.w3c.notifications.* \n import
org.w3c.performance.* \n import org.w3c.workers.* \n import org.w3c.xhr.* \n \n public external interface
PointerEventInit : MouseEventInit { \n    var pointerId: Int? /* = 0 */ \n    get() = definedExternally \n
set(value) = definedExternally \n    var width: Double? /* = 1.0 */ \n    get() = definedExternally \n    set(value) =
definedExternally \n    var height: Double? /* = 1.0 */ \n    get() = definedExternally \n    set(value) =
definedExternally \n    var pressure: Float? /* = 0f */ \n    get() = definedExternally \n    set(value) =
definedExternally \n    var tangentialPressure: Float? /* = 0f */ \n    get() = definedExternally \n    set(value) =
definedExternally \n    var tiltX: Int? /* = 0 */ \n    get() = definedExternally \n    set(value) = definedExternally \n
var tiltY: Int? /* = 0 */ \n    get() = definedExternally \n    set(value) = definedExternally \n    var twist: Int? /* =
0 */ \n    get() = definedExternally \n    set(value) = definedExternally \n    var pointerType: String? /* = "" */ \n

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    get() = definedExternally\n    set(value) = definedExternally\n    var isPrimary: Boolean? /* = false */\n
get() = definedExternally\n    set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
PointerEventInit(pointerId: Int? = 0, width: Double? = 1.0, height: Double? = 1.0, pressure: Float? = 0f,
tangentialPressure: Float? = 0f, tiltX: Int? = 0, tiltY: Int? = 0, twist: Int? = 0, pointerType: String? = "", isPrimary:
Boolean? = false, screenX: Int? = 0, screenY: Int? = 0, clientX: Int? = 0, clientY: Int? = 0, button: Short? = 0,
buttons: Short? = 0, relatedTarget: EventTarget? = null, region: String? = null, ctrlKey: Boolean? = false, shiftKey:
Boolean? = false, altKey: Boolean? = false, metaKey: Boolean? = false, modifierAltGraph: Boolean? = false,
modifierCapsLock: Boolean? = false, modifierFn: Boolean? = false, modifierFnLock: Boolean? = false,
modifierHyper: Boolean? = false, modifierNumLock: Boolean? = false, modifierScrollLock: Boolean? = false,
modifierSuper: Boolean? = false, modifierSymbol: Boolean? = false, modifierSymbolLock: Boolean? = false, view:
Window? = null, detail: Int? = 0, bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? =
false): PointerEventInit {\n    val o = js("{}")\n    o["pointerId"] = pointerId\n    o["width"] = width\n
o["height"] = height\n    o["pressure"] = pressure\n    o["tangentialPressure"] = tangentialPressure\n
o["tiltX"] = tiltX\n    o["tiltY"] = tiltY\n    o["twist"] = twist\n    o["pointerType"] = pointerType\n
o["isPrimary"] = isPrimary\n    o["screenX"] = screenX\n    o["screenY"] = screenY\n    o["clientX"] =
clientX\n    o["clientY"] = clientY\n    o["button"] = button\n    o["buttons"] = buttons\n    o["relatedTarget"] =
relatedTarget\n    o["region"] = region\n    o["ctrlKey"] = ctrlKey\n    o["shiftKey"] = shiftKey\n    o["altKey"]
= altKey\n    o["metaKey"] = metaKey\n    o["modifierAltGraph"] = modifierAltGraph\n
o["modifierCapsLock"] = modifierCapsLock\n    o["modifierFn"] = modifierFn\n    o["modifierFnLock"] =
modifierFnLock\n    o["modifierHyper"] = modifierHyper\n    o["modifierNumLock"] = modifierNumLock\n
o["modifierScrollLock"] = modifierScrollLock\n    o["modifierSuper"] = modifierSuper\n
o["modifierSymbol"] = modifierSymbol\n    o["modifierSymbolLock"] = modifierSymbolLock\n    o["view"] =
view\n    o["detail"] = detail\n    o["bubbles"] = bubbles\n    o["cancelable"] = cancelable\n    o["composed"] =
composed\n    return o\n}\n\n/**\n * Exposes the JavaScript

```

```

[PointerEvent](https://developer.mozilla.org/en/docs/Web/API/PointerEvent) to Kotlin\n */\npublic external open
class PointerEvent(type: String, eventInitDict: PointerEventInit = definedExternally) : MouseEvent {\n    open val
pointerId: Int\n    open val width: Double\n    open val height: Double\n    open val pressure: Float\n    open val
tangentialPressure: Float\n    open val tiltX: Int\n    open val tiltY: Int\n    open val twist: Int\n    open val
pointerType: String\n    open val isPrimary: Boolean\n\n    companion object {\n        val NONE: Short\n        val
CAPTURING_PHASE: Short\n        val AT_TARGET: Short\n        val BUBBLING_PHASE: Short\n    }\n}"/**\n

```

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 * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code
is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\n// NOTE: THIS
FILE IS AUTO-GENERATED, DO NOT EDIT!\n\n// See github.com/kotlin/dukat for details\n\npackage
org.w3c.dom.svg\n\nimport kotlin.js.*\nimport org.khronos.webgl.*\nimport org.w3c.css.masking.*\nimport
org.w3c.dom.*\nimport org.w3c.dom.clipboard.*\nimport org.w3c.dom.css.*\nimport
org.w3c.dom.events.*\nimport org.w3c.dom.mediacapture.*\nimport org.w3c.dom.parsing.*\nimport
org.w3c.dom.pointerevents.*\nimport org.w3c.dom.url.*\nimport org.w3c.fetch.*\nimport org.w3c.files.*\nimport
org.w3c.notifications.*\nimport org.w3c.performance.*\nimport org.w3c.workers.*\nimport org.w3c.xhr.*\n\n/**\n

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 * Exposes the JavaScript [SVGElement](https://developer.mozilla.org/en/docs/Web/API/SVGElement) to Kotlin\n
*/\n\npublic external abstract class SVGElement : Element, ElementCSSInlineStyle, GlobalEventHandlers,
SVGElementInstance {\n    open val dataset: DOMStringMap\n    open val ownerSVGElement:
SVGSVGElement?\n    open val viewportElement: SVGElement?\n    open var tabIndex: Int\n    fun focus()\n    fun
blur()\n\n    companion object {\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n
val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE:
Short\n        val ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val
COMMENT_NODE: Short\n        val DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n
val DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n

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    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\npublic external interface
SVGBoundingBoxOptions {\n    var fill: Boolean? /* = true */\n        get() = definedExternally\n        set(value) =
definedExternally\n    var stroke: Boolean? /* = false */\n        get() = definedExternally\n        set(value) =
definedExternally\n    var markers: Boolean? /* = false */\n        get() = definedExternally\n        set(value) =
definedExternally\n    var clipped: Boolean? /* = false */\n        get() = definedExternally\n        set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun SVGBoundingBoxOptions(fill: Boolean? =
true, stroke: Boolean? = false, markers: Boolean? = false, clipped: Boolean? = false): SVGBoundingBoxOptions {\n
    val o = js("{}")\n    o["fill"] = fill\n    o["stroke"] = stroke\n    o["markers"] = markers\n    o["clipped"] =
clipped\n    return o\n}\n\n/**\n * Exposes the JavaScript
[SVGGraphicsElement](https://developer.mozilla.org/en/docs/Web/API/SVGGraphicsElement) to Kotlin\n
*/\n\npublic external abstract class SVGGraphicsElement : SVGElement, SVGTests {\n    open val transform:
SVGAnimatedTransformList\n    fun getBBox(options: SVGBoundingBoxOptions = definedExternally):
DOMRect\n    fun getCTM(): DOMMatrix?\n    fun getScreenCTM(): DOMMatrix?\n\n    companion object {\n
val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val
CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE:
Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n        }\n}\n\n/**\n * Exposes the JavaScript
[SVGGeometryElement](https://developer.mozilla.org/en/docs/Web/API/SVGGeometryElement) to Kotlin\n
*/\n\npublic external abstract class SVGGeometryElement : SVGGraphicsElement {\n    open val pathLength:
SVGAnimatedNumber\n    fun isPointInFill(point: DOMPoint): Boolean\n    fun isPointInStroke(point: DOMPoint):
Boolean\n    fun getTotalLength(): Float\n    fun getPointAtLength(distance: Float): DOMPoint\n\n    companion
object {\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val TEXT_NODE:
Short\n        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE: Short\n        val
ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE:
Short\n        val DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n        }\n}\n\n/**\n * Exposes the JavaScript
[SVGNumber](https://developer.mozilla.org/en/docs/Web/API/SVGNumber) to Kotlin\n
*/\n\npublic external
abstract class SVGNumber {\n    open var value: Float\n}\n\n/**\n * Exposes the JavaScript
[SVGLength](https://developer.mozilla.org/en/docs/Web/API/SVGLength) to Kotlin\n
*/\n\npublic external abstract
class SVGLength {\n    open val unitType: Short\n    open var value: Float\n    open var valueInSpecifiedUnits:
Float\n    open var valueAsString: String\n    fun newValueSpecifiedUnits(unitType: Short, valueInSpecifiedUnits:
Float)\n    fun convertToSpecifiedUnits(unitType: Short)\n\n    companion object {\n        val
SVG_LENGTHTYPE_UNKNOWN: Short\n        val SVG_LENGTHTYPE_NUMBER: Short\n        val
SVG_LENGTHTYPE_PERCENTAGE: Short\n        val SVG_LENGTHTYPE_EMS: Short\n        val
SVG_LENGTHTYPE_EXS: Short\n        val SVG_LENGTHTYPE_PX: Short\n        val
SVG_LENGTHTYPE_CM: Short\n        val SVG_LENGTHTYPE_MM: Short\n        val
SVG_LENGTHTYPE_IN: Short\n        val SVG_LENGTHTYPE_PT: Short\n        val SVG_LENGTHTYPE_PC:

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Short\n } }\n\n/\*\*\n \* Exposes the JavaScript [SVGAngle](https://developer.mozilla.org/en/docs/Web/API/SVGAngle) to Kotlin\n \*/\npublic external abstract class SVGAngle {\n open val unitType: Short\n open var value: Float\n open var valueInSpecifiedUnits: Float\n open var valueAsString: String\n fun new ValueSpecifiedUnits(unitType: Short, valueInSpecifiedUnits: Float)\n fun convertToSpecifiedUnits(unitType: Short)\n\n companion object {\n val SVG\_ANGLETYPE\_UNKNOWN: Short\n val SVG\_ANGLETYPE\_UNSPECIFIED: Short\n val SVG\_ANGLETYPE\_DEG: Short\n val SVG\_ANGLETYPE\_RAD: Short\n val SVG\_ANGLETYPE\_GRAD: Short\n } }\n\n\npublic external abstract class SVGNameList {\n open val length: Int\n open val numberOfItems: Int\n fun clear()\n fun initialize(newItem: dynamic): dynamic\n fun insertItemBefore(newItem: dynamic, index: Int): dynamic\n fun replaceItem(newItem: dynamic, index: Int): dynamic\n fun removeItem(index: Int): dynamic\n fun appendItem(newItem: dynamic): dynamic\n fun getItem(index: Int): dynamic\n } }\n\n@kotlin.internal.InlineOnly\npublic inline operator fun SVGNameList.get(index: Int): dynamic = asDynamic()[index]\n\n@kotlin.internal.InlineOnly\npublic inline operator fun SVGNameList.set(index: Int, newItem: dynamic) { asDynamic()[index] = newItem } }\n\n/\*\*\n \* Exposes the JavaScript [SVGNumberList](https://developer.mozilla.org/en/docs/Web/API/SVGNumberList) to Kotlin\n \*/\npublic external abstract class SVGNumberList {\n open val length: Int\n open val numberOfItems: Int\n fun clear()\n fun initialize(newItem: SVGNumber): SVGNumber\n fun insertItemBefore(newItem: SVGNumber, index: Int): SVGNumber\n fun replaceItem(newItem: SVGNumber, index: Int): SVGNumber\n fun removeItem(index: Int): SVGNumber\n fun appendItem(newItem: SVGNumber): SVGNumber\n fun getItem(index: Int): SVGNumber\n } }\n\n@kotlin.internal.InlineOnly\npublic inline operator fun SVGNumberList.get(index: Int): SVGNumber? = asDynamic()[index]\n\n@kotlin.internal.InlineOnly\npublic inline operator fun SVGNumberList.set(index: Int, newItem: SVGNumber) { asDynamic()[index] = newItem } }\n\n/\*\*\n \* Exposes the JavaScript [SVGLengthList](https://developer.mozilla.org/en/docs/Web/API/SVGLengthList) to Kotlin\n \*/\npublic external abstract class SVGLengthList {\n open val length: Int\n open val numberOfItems: Int\n fun clear()\n fun initialize(newItem: SVGLength): SVGLength\n fun insertItemBefore(newItem: SVGLength, index: Int): SVGLength\n fun replaceItem(newItem: SVGLength, index: Int): SVGLength\n fun removeItem(index: Int): SVGLength\n fun appendItem(newItem: SVGLength): SVGLength\n fun getItem(index: Int): SVGLength\n } }\n\n@kotlin.internal.InlineOnly\npublic inline operator fun SVGLengthList.get(index: Int): SVGLength? = asDynamic()[index]\n\n@kotlin.internal.InlineOnly\npublic inline operator fun SVGLengthList.set(index: Int, newItem: SVGLength) { asDynamic()[index] = newItem } }\n\n/\*\*\n \* Exposes the JavaScript [SVGAnimatedBoolean](https://developer.mozilla.org/en/docs/Web/API/SVGAnimatedBoolean) to Kotlin\n \*/\npublic external abstract class SVGAnimatedBoolean {\n open var baseVal: Boolean\n open val animVal: Boolean\n } }\n\n/\*\*\n \* Exposes the JavaScript [SVGAnimatedEnumeration](https://developer.mozilla.org/en/docs/Web/API/SVGAnimatedEnumeration) to Kotlin\n \*/\npublic external abstract class SVGAnimatedEnumeration {\n open var baseVal: Short\n open val animVal: Short\n } }\n\n/\*\*\n \* Exposes the JavaScript [SVGAnimatedInteger](https://developer.mozilla.org/en/docs/Web/API/SVGAnimatedInteger) to Kotlin\n \*/\npublic external abstract class SVGAnimatedInteger {\n open var baseVal: Int\n open val animVal: Int\n } }\n\n/\*\*\n \* Exposes the JavaScript [SVGAnimatedNumber](https://developer.mozilla.org/en/docs/Web/API/SVGAnimatedNumber) to Kotlin\n \*/\npublic external abstract class SVGAnimatedNumber {\n open var baseVal: Float\n open val animVal: Float\n } }\n\n/\*\*\n \* Exposes the JavaScript [SVGAnimatedLength](https://developer.mozilla.org/en/docs/Web/API/SVGAnimatedLength) to Kotlin\n \*/\npublic external abstract class SVGAnimatedLength {\n open val baseVal: SVGLength\n open val animVal: SVGLength\n } }\n\n/\*\*\n \* Exposes the JavaScript [SVGAnimatedAngle](https://developer.mozilla.org/en/docs/Web/API/SVGAnimatedAngle) to Kotlin\n \*/\npublic external abstract class SVGAnimatedAngle {\n open val baseVal: SVGAngle\n open val animVal:

SVGAngle\n}\n\n/\*\*\n \* Exposes the JavaScript [SVGAnimatedString](https://developer.mozilla.org/en/docs/Web/API/SVGAnimatedString) to Kotlin\n \*^\npublic external abstract class SVGAnimatedString {\n open var baseVal: String\n open val animVal: String\n}\n\n/\*\*\n \* Exposes the JavaScript [SVGAnimatedRect](https://developer.mozilla.org/en/docs/Web/API/SVGAnimatedRect) to Kotlin\n \*^\npublic external abstract class SVGAnimatedRect {\n open val baseVal: DOMRect\n open val animVal: DOMRectReadOnly\n}\n\n/\*\*\n \* Exposes the JavaScript [SVGAnimatedNumberList](https://developer.mozilla.org/en/docs/Web/API/SVGAnimatedNumberList) to Kotlin\n \*^\npublic external abstract class SVGAnimatedNumberList {\n open val baseVal: SVGNumberList\n open val animVal: SVGNumberList\n}\n\n/\*\*\n \* Exposes the JavaScript [SVGAnimatedLengthList](https://developer.mozilla.org/en/docs/Web/API/SVGAnimatedLengthList) to Kotlin\n \*^\npublic external abstract class SVGAnimatedLengthList {\n open val baseVal: SVGLengthList\n open val animVal: SVGLengthList\n}\n\n/\*\*\n \* Exposes the JavaScript [SVGStringList](https://developer.mozilla.org/en/docs/Web/API/SVGStringList) to Kotlin\n \*^\npublic external abstract class SVGStringList {\n open val length: Int\n open val numberOfItems: Int\n fun clear()\n fun initialize(newItem: String): String\n fun insertItemBefore(newItem: String, index: Int): String\n fun replaceItem(newItem: String, index: Int): String\n fun removeItem(index: Int): String\n fun appendItem(newItem: String): String\n fun getItem(index: Int): String\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun SVGStringList.get(index: Int): String? = asDynamic()[index]\n\n@kotlin.internal.InlineOnly\npublic inline operator fun SVGStringList.set(index: Int, newItem: String) { asDynamic()[index] = newItem }\n\n/\*\*\n \* Exposes the JavaScript [SVGUnitTypes](https://developer.mozilla.org/en/docs/Web/API/SVGUnitTypes) to Kotlin\n \*^\n@Suppress("NESTED\_CLASS\_IN\_EXTERNAL\_INTERFACE")\npublic external interface SVGUnitTypes {\n companion object {\n val SVG\_UNIT\_TYPE\_UNKNOWN: Short\n val SVG\_UNIT\_TYPE\_USERSPACEONUSE: Short\n val SVG\_UNIT\_TYPE\_OBJECTBOUNDINGBOX: Short\n }\n}\n\n/\*\*\n \* Exposes the JavaScript [SVGTTests](https://developer.mozilla.org/en/docs/Web/API/SVGTTests) to Kotlin\n \*^\npublic external interface SVGTTests {\n val requiredExtensions: SVGStringList\n val systemLanguage: SVGStringList\n}\n\npublic external interface SVGFitToViewBox {\n val viewBox: SVGAnimatedRect\n val preserveAspectRatio: SVGAnimatedPreserveAspectRatio\n}\n\n/\*\*\n \* Exposes the JavaScript [SVGZoomAndPan](https://developer.mozilla.org/en/docs/Web/API/SVGZoomAndPan) to Kotlin\n \*^\n@Suppress("NESTED\_CLASS\_IN\_EXTERNAL\_INTERFACE")\npublic external interface SVGZoomAndPan {\n var zoomAndPan: Short\n\n companion object {\n val SVG\_ZOOMANDPAN\_UNKNOWN: Short\n val SVG\_ZOOMANDPAN\_DISABLE: Short\n val SVG\_ZOOMANDPAN\_MAGNIFY: Short\n }\n}\n\n/\*\*\n \* Exposes the JavaScript [SVGURIReference](https://developer.mozilla.org/en/docs/Web/API/SVGURIReference) to Kotlin\n \*^\npublic external interface SVGURIReference {\n val href: SVGAnimatedString\n}\n\n/\*\*\n \* Exposes the JavaScript [SVGSVGElement](https://developer.mozilla.org/en/docs/Web/API/SVGSVGElement) to Kotlin\n \*^\npublic external abstract class SVGSVGElement : SVGGraphicsElement, SVGFitToViewBox, SVGZoomAndPan, WindowEventHandlers {\n open val x: SVGAnimatedLength\n open val y: SVGAnimatedLength\n open val width: SVGAnimatedLength\n open val height: SVGAnimatedLength\n open var currentScale: Float\n open val currentTranslate: DOMPointReadOnly\n fun getIntersectionList(rect: DOMRectReadOnly, referenceElement: SVGElement?): NodeList\n fun getEnclosureList(rect: DOMRectReadOnly, referenceElement: SVGElement?): NodeList\n fun checkIntersection(element: SVGElement, rect: DOMRectReadOnly): Boolean\n fun checkEnclosure(element: SVGElement, rect: DOMRectReadOnly): Boolean\n fun deselectAll()\n fun createSVGNumber(): SVGNumber\n fun createSVGLength(): SVGLength\n fun createSVGAngle(): SVGAngle\n fun createSVGPoint(): DOMPoint\n fun createSVGMatrix(): DOMMatrix\n fun createSVGRect(): DOMRect\n fun createSVGTransform(): SVGTransform\n fun createSVGTransformFromMatrix(matrix: DOMMatrixReadOnly): SVGTransform\n fun



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getElementById(elementId: String): Element\n fun suspendRedraw(maxWaitMilliseconds: Int): Int\n fun
unsuspendRedraw(suspendHandleID: Int)\n fun unsuspendRedrawAll()\n fun forceRedraw()\n\n companion
object {\n val SVG_ZOOMANDPAN_UNKNOWN: Short\n val SVG_ZOOMANDPAN_DISABLE:
Short\n val SVG_ZOOMANDPAN_MAGNIFY: Short\n val ELEMENT_NODE: Short\n val
ATTRIBUTE_NODE: Short\n val TEXT_NODE: Short\n val CDATA_SECTION_NODE: Short\n val
ENTITY_REFERENCE_NODE: Short\n val ENTITY_NODE: Short\n val
PROCESSING_INSTRUCTION_NODE: Short\n val COMMENT_NODE: Short\n val
DOCUMENT_NODE: Short\n val DOCUMENT_TYPE_NODE: Short\n val
DOCUMENT_FRAGMENT_NODE: Short\n val NOTATION_NODE: Short\n val
DOCUMENT_POSITION_DISCONNECTED: Short\n val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }\n}\n\n/**\n * Exposes the JavaScript
[SVGGElement](https://developer.mozilla.org/en/docs/Web/API/SVGGElement) to Kotlin\n */\npublic external
abstract class SVGGElement : SVGGraphicsElement {\n companion object {\n val ELEMENT_NODE:
Short\n val ATTRIBUTE_NODE: Short\n val TEXT_NODE: Short\n val CDATA_SECTION_NODE: Short\n
Short\n val ENTITY_REFERENCE_NODE: Short\n val ENTITY_NODE: Short\n val
PROCESSING_INSTRUCTION_NODE: Short\n val COMMENT_NODE: Short\n val
DOCUMENT_NODE: Short\n val DOCUMENT_TYPE_NODE: Short\n val
DOCUMENT_FRAGMENT_NODE: Short\n val NOTATION_NODE: Short\n val
DOCUMENT_POSITION_DISCONNECTED: Short\n val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }\n}\n\npublic external abstract class
SVGUnknownElement : SVGGraphicsElement {\n companion object {\n val ELEMENT_NODE: Short\n
val ATTRIBUTE_NODE: Short\n val TEXT_NODE: Short\n val CDATA_SECTION_NODE: Short\n
val ENTITY_REFERENCE_NODE: Short\n val ENTITY_NODE: Short\n val
PROCESSING_INSTRUCTION_NODE: Short\n val COMMENT_NODE: Short\n val
DOCUMENT_NODE: Short\n val DOCUMENT_TYPE_NODE: Short\n val
DOCUMENT_FRAGMENT_NODE: Short\n val NOTATION_NODE: Short\n val
DOCUMENT_POSITION_DISCONNECTED: Short\n val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }\n}\n\npublic external abstract class
SVGDefsElement : SVGGraphicsElement {\n companion object {\n val
ELEMENT_NODE: Short\n val ATTRIBUTE_NODE: Short\n val TEXT_NODE: Short\n val
CDATA_SECTION_NODE: Short\n val ENTITY_REFERENCE_NODE: Short\n val ENTITY_NODE:
Short\n val PROCESSING_INSTRUCTION_NODE: Short\n val COMMENT_NODE: Short\n val
DOCUMENT_NODE: Short\n val DOCUMENT_TYPE_NODE: Short\n val
DOCUMENT_FRAGMENT_NODE: Short\n val NOTATION_NODE: Short\n val
DOCUMENT_POSITION_DISCONNECTED: Short\n val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }\n}\n\npublic external abstract class
SVGDescElement : SVGElement {\n companion object {\n val ELEMENT_NODE:
Short\n val ATTRIBUTE_NODE: Short\n val TEXT_NODE: Short\n val CDATA_SECTION_NODE:

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Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val
PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }n}\n\n/**\n * Exposes the JavaScript
[SVGMetadataElement](https://developer.mozilla.org/en/docs/Web/API/SVGMetadataElement) to Kotlin\n
*/\npublic external abstract class SVGMetadataElement : SVGElement {\n    companion object {\n    val
ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val
CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE:
Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }n}\n\n/**\n * Exposes the JavaScript
[SVGTitleElement](https://developer.mozilla.org/en/docs/Web/API/SVGTitleElement) to Kotlin\n
*/\npublic
external abstract class SVGTitleElement : SVGElement {\n    companion object {\n    val ELEMENT_NODE:
Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE:
Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val
PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }n}\n\n/**\n * Exposes the JavaScript
[SVGSymbolElement](https://developer.mozilla.org/en/docs/Web/API/SVGSymbolElement) to Kotlin\n
*/\npublic
external abstract class SVGSymbolElement : SVGGraphicsElement, SVGFitToViewBox {\n    companion object
{\n    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n
val CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val
ENTITY_NODE: Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE:
Short\n    val DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }n}\n\n/**\n * Exposes the JavaScript
[SVGUseElement](https://developer.mozilla.org/en/docs/Web/API/SVGUseElement) to Kotlin\n
*/\npublic external
abstract class SVGUseElement : SVGGraphicsElement, SVGURIReference {\n    open val x:
SVGAnimatedLength\n    open val y: SVGAnimatedLength\n    open val width: SVGAnimatedLength\n
open val height: SVGAnimatedLength\n    open val instanceRoot: SVGElement?\n    open val animatedInstanceRoot:
SVGElement?\n\n    companion object {\n    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE:
Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val
ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val

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PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\npublic external open class
SVGUseElementShadowRoot : ShadowRoot {\n    companion object {\n        val ELEMENT_NODE: Short\n
val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n
val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val
PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\npublic external interface
SVGElementInstance {\n    val correspondingElement: SVGElement?\n        get() = definedExternally\n    val
correspondingUseElement: SVGUseElement?\n        get() = definedExternally\n}\n}\n\npublic external open class
ShadowAnimation(source: dynamic, newTarget: dynamic) {\n    open val sourceAnimation: dynamic\n}\n}\n\n**\n *
Exposes the JavaScript [SVGSwitchElement](https://developer.mozilla.org/en/docs/Web/API/SVGSwitchElement)
to Kotlin\n *^\n\npublic external abstract class SVGSwitchElement : SVGGraphicsElement {\n    companion object
{\n        val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n
val CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val
ENTITY_NODE: Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE:
Short\n    val DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\npublic external interface
GetSVGDocument {\n    fun getSVGDocument(): Document\n}\n}\n\n**\n * Exposes the JavaScript
[SVGStyleElement](https://developer.mozilla.org/en/docs/Web/API/SVGStyleElement) to Kotlin\n *^\n\npublic
external abstract class SVGStyleElement : SVGElement, LinkStyle {\n    open var type: String\n    open var media:
String\n    open var title: String\n\n    companion object {\n        val ELEMENT_NODE: Short\n    val
ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val
ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val
PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n}\n\n**\n * Exposes the JavaScript
[SVGTransform](https://developer.mozilla.org/en/docs/Web/API/SVGTransform) to Kotlin\n *^\n\npublic external
abstract class SVGTransform {\n    open val type: Short\n    open val matrix: DOMMatrix\n    open val angle:
Float\n    fun setMatrix(matrix: DOMMatrixReadOnly)\n    fun setTranslate(tx: Float, ty: Float)\n    fun setScale(sx:
Float, sy: Float)\n    fun setRotate(angle: Float, cx: Float, cy: Float)\n    fun setSkewX(angle: Float)\n    fun

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val y: SVGAnimatedLength\n  open val width: SVGAnimatedLength\n  open val height: SVGAnimatedLength\n
open val rx: SVGAnimatedLength\n  open val ry: SVGAnimatedLength\n\n  companion object {\n    val
ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val
CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE:
Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n  }\n\n\n/**\n * Exposes the JavaScript
[SVGCircleElement](https://developer.mozilla.org/en/docs/Web/API/SVGCircleElement) to Kotlin\n */\npublic
external abstract class SVGCircleElement : SVGGeometryElement {\n  open val cx: SVGAnimatedLength\n
open val cy: SVGAnimatedLength\n  open val r: SVGAnimatedLength\n\n  companion object {\n    val
ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val
CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE:
Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n  }\n\n\n/**\n * Exposes the JavaScript
[SVGEllipseElement](https://developer.mozilla.org/en/docs/Web/API/SVGEllipseElement) to Kotlin\n */\npublic
external abstract class SVGEllipseElement : SVGGeometryElement {\n  open val cx: SVGAnimatedLength\n
open val cy: SVGAnimatedLength\n  open val rx: SVGAnimatedLength\n  open val ry: SVGAnimatedLength\n\n
companion object {\n    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val
TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE:
Short\n    val ENTITY_NODE: Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val
COMMENT_NODE: Short\n    val DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n
    val DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n  }\n\n\n/**\n * Exposes the JavaScript
[SVGLineElement](https://developer.mozilla.org/en/docs/Web/API/SVGLineElement) to Kotlin\n */\npublic
external abstract class SVGLineElement : SVGGeometryElement {\n  open val x1: SVGAnimatedLength\n  open
val y1: SVGAnimatedLength\n  open val x2: SVGAnimatedLength\n  open val y2: SVGAnimatedLength\n\n
companion object {\n    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val
TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE:
Short\n    val ENTITY_NODE: Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val
COMMENT_NODE: Short\n    val DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n
    val DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n  }\n\n\n/**\n * Exposes the JavaScript
[SVGMeshElement](https://developer.mozilla.org/en/docs/Web/API/SVGMeshElement) to Kotlin\n */\npublic

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getCharNumAtPosition(point: DOMPoint): Int\n fun selectSubString(charnum: Int, nchars: Int)\n companion
object {\n val LENGTHADJUST_UNKNOWN: Short\n val LENGTHADJUST_SPACING: Short\n
val LENGTHADJUST_SPACINGANDGLYPHS: Short\n val ELEMENT_NODE: Short\n val
ATTRIBUTE_NODE: Short\n val TEXT_NODE: Short\n val CDATA_SECTION_NODE: Short\n val
ENTITY_REFERENCE_NODE: Short\n val ENTITY_NODE: Short\n val
PROCESSING_INSTRUCTION_NODE: Short\n val COMMENT_NODE: Short\n val
DOCUMENT_NODE: Short\n val DOCUMENT_TYPE_NODE: Short\n val
DOCUMENT_FRAGMENT_NODE: Short\n val NOTATION_NODE: Short\n val
DOCUMENT_POSITION_DISCONNECTED: Short\n val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }\n}\n\n/**\n * Exposes the JavaScript
[SVGTextPositioningElement](https://developer.mozilla.org/en/docs/Web/API/SVGTextPositioningElement) to
Kotlin\n */\npublic external abstract class SVGTextPositioningElement : SVGTextContentElement {\n open val x:
SVGAnimatedLengthList\n open val y: SVGAnimatedLengthList\n open val dx: SVGAnimatedLengthList\n
open val dy: SVGAnimatedLengthList\n open val rotate: SVGAnimatedNumberList\n\n companion object {\n
val LENGTHADJUST_UNKNOWN: Short\n val LENGTHADJUST_SPACING: Short\n val
LENGTHADJUST_SPACINGANDGLYPHS: Short\n val ELEMENT_NODE: Short\n val
ATTRIBUTE_NODE: Short\n val TEXT_NODE: Short\n val CDATA_SECTION_NODE: Short\n val
ENTITY_REFERENCE_NODE: Short\n val ENTITY_NODE: Short\n val
PROCESSING_INSTRUCTION_NODE: Short\n val COMMENT_NODE: Short\n val
DOCUMENT_NODE: Short\n val DOCUMENT_TYPE_NODE: Short\n val
DOCUMENT_FRAGMENT_NODE: Short\n val NOTATION_NODE: Short\n val
DOCUMENT_POSITION_DISCONNECTED: Short\n val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }\n}\n\n/**\n * Exposes the JavaScript
[SVGTextElement](https://developer.mozilla.org/en/docs/Web/API/SVGTextElement) to Kotlin\n */\npublic
external abstract class SVGTextElement : SVGTextPositioningElement {\n companion object {\n val
LENGTHADJUST_UNKNOWN: Short\n val LENGTHADJUST_SPACING: Short\n val
LENGTHADJUST_SPACINGANDGLYPHS: Short\n val ELEMENT_NODE: Short\n val
ATTRIBUTE_NODE: Short\n val TEXT_NODE: Short\n val CDATA_SECTION_NODE: Short\n val
ENTITY_REFERENCE_NODE: Short\n val ENTITY_NODE: Short\n val
PROCESSING_INSTRUCTION_NODE: Short\n val COMMENT_NODE: Short\n val
DOCUMENT_NODE: Short\n val DOCUMENT_TYPE_NODE: Short\n val
DOCUMENT_FRAGMENT_NODE: Short\n val NOTATION_NODE: Short\n val
DOCUMENT_POSITION_DISCONNECTED: Short\n val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }\n}\n\n/**\n * Exposes the JavaScript
[SVGTSpanElement](https://developer.mozilla.org/en/docs/Web/API/SVGTSpanElement) to Kotlin\n */\npublic
external abstract class SVGTSpanElement : SVGTextPositioningElement {\n companion object {\n val
LENGTHADJUST_UNKNOWN: Short\n val LENGTHADJUST_SPACING: Short\n val
LENGTHADJUST_SPACINGANDGLYPHS: Short\n val ELEMENT_NODE: Short\n val
ATTRIBUTE_NODE: Short\n val TEXT_NODE: Short\n val CDATA_SECTION_NODE: Short\n val
ENTITY_REFERENCE_NODE: Short\n val ENTITY_NODE: Short\n val
PROCESSING_INSTRUCTION_NODE: Short\n val COMMENT_NODE: Short\n val
DOCUMENT_NODE: Short\n val DOCUMENT_TYPE_NODE: Short\n val

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DOCUMENT\_FRAGMENT\_NODE: Short\n val NOTATION\_NODE: Short\n val  
DOCUMENT\_POSITION\_DISCONNECTED: Short\n val DOCUMENT\_POSITION\_PRECEDING: Short\n  
val DOCUMENT\_POSITION\_FOLLOWING: Short\n val DOCUMENT\_POSITION\_CONTAINS: Short\n  
val DOCUMENT\_POSITION\_CONTAINED\_BY: Short\n val  
DOCUMENT\_POSITION\_IMPLEMENTATION\_SPECIFIC: Short\n }n}\n\n/\*\*\n \* Exposes the JavaScript  
[SVGTextPathElement](https://developer.mozilla.org/en/docs/Web/API/SVGTextPathElement) to Kotlin\n  
\*/\npublic external abstract class SVGTextPathElement : SVGTextContentElement, SVGURIReference {\n open  
val startOffset: SVGAnimatedLength\n open val method: SVGAnimatedEnumeration\n open val spacing:  
SVGAnimatedEnumeration\n\n companion object {\n val TEXTPATH\_METHODTYPE\_UNKNOWN:  
Short\n val TEXTPATH\_METHODTYPE\_ALIGN: Short\n val  
TEXTPATH\_METHODTYPE\_STRETCH: Short\n val TEXTPATH\_SPACINGTYPE\_UNKNOWN: Short\n  
val TEXTPATH\_SPACINGTYPE\_AUTO: Short\n val TEXTPATH\_SPACINGTYPE\_EXACT: Short\n  
val LENGTHADJUST\_UNKNOWN: Short\n val LENGTHADJUST\_SPACING: Short\n val  
LENGTHADJUST\_SPACINGANDGLYPHS: Short\n val ELEMENT\_NODE: Short\n val  
ATTRIBUTE\_NODE: Short\n val TEXT\_NODE: Short\n val CDATA\_SECTION\_NODE: Short\n val  
ENTITY\_REFERENCE\_NODE: Short\n val ENTITY\_NODE: Short\n val  
PROCESSING\_INSTRUCTION\_NODE: Short\n val COMMENT\_NODE: Short\n val  
DOCUMENT\_NODE: Short\n val DOCUMENT\_TYPE\_NODE: Short\n val  
DOCUMENT\_FRAGMENT\_NODE: Short\n val NOTATION\_NODE: Short\n val  
DOCUMENT\_POSITION\_DISCONNECTED: Short\n val DOCUMENT\_POSITION\_PRECEDING: Short\n  
val DOCUMENT\_POSITION\_FOLLOWING: Short\n val DOCUMENT\_POSITION\_CONTAINS: Short\n  
val DOCUMENT\_POSITION\_CONTAINED\_BY: Short\n val  
DOCUMENT\_POSITION\_IMPLEMENTATION\_SPECIFIC: Short\n }n}\n\n/\*\*\n \* Exposes the JavaScript  
[SVGImageElement](https://developer.mozilla.org/en/docs/Web/API/SVGImageElement) to Kotlin\n \*/\npublic  
external abstract class SVGImageElement : SVGGraphicsElement, SVGURIReference,  
HTMLOrSVGImageElement {\n open val x: SVGAnimatedLength\n open val y: SVGAnimatedLength\n open  
val width: SVGAnimatedLength\n open val height: SVGAnimatedLength\n open val preserveAspectRatio:  
SVGAnimatedPreserveAspectRatio\n open var crossOrigin: String?\n\n companion object {\n val  
ELEMENT\_NODE: Short\n val ATTRIBUTE\_NODE: Short\n val TEXT\_NODE: Short\n val  
CDATA\_SECTION\_NODE: Short\n val ENTITY\_REFERENCE\_NODE: Short\n val ENTITY\_NODE:  
Short\n val PROCESSING\_INSTRUCTION\_NODE: Short\n val COMMENT\_NODE: Short\n val  
DOCUMENT\_NODE: Short\n val DOCUMENT\_TYPE\_NODE: Short\n val  
DOCUMENT\_FRAGMENT\_NODE: Short\n val NOTATION\_NODE: Short\n val  
DOCUMENT\_POSITION\_DISCONNECTED: Short\n val DOCUMENT\_POSITION\_PRECEDING: Short\n  
val DOCUMENT\_POSITION\_FOLLOWING: Short\n val DOCUMENT\_POSITION\_CONTAINS: Short\n  
val DOCUMENT\_POSITION\_CONTAINED\_BY: Short\n val  
DOCUMENT\_POSITION\_IMPLEMENTATION\_SPECIFIC: Short\n }n}\n\n/\*\*\n \* Exposes the JavaScript  
[SVGForeignObjectElement](https://developer.mozilla.org/en/docs/Web/API/SVGForeignObjectElement) to  
Kotlin\n \*/\npublic external abstract class SVGForeignObjectElement : SVGGraphicsElement {\n open val x:  
SVGAnimatedLength\n open val y: SVGAnimatedLength\n open val width: SVGAnimatedLength\n open val  
height: SVGAnimatedLength\n\n companion object {\n val ELEMENT\_NODE: Short\n val  
ATTRIBUTE\_NODE: Short\n val TEXT\_NODE: Short\n val CDATA\_SECTION\_NODE: Short\n val  
ENTITY\_REFERENCE\_NODE: Short\n val ENTITY\_NODE: Short\n val  
PROCESSING\_INSTRUCTION\_NODE: Short\n val COMMENT\_NODE: Short\n val  
DOCUMENT\_NODE: Short\n val DOCUMENT\_TYPE\_NODE: Short\n val  
DOCUMENT\_FRAGMENT\_NODE: Short\n val NOTATION\_NODE: Short\n val  
DOCUMENT\_POSITION\_DISCONNECTED: Short\n val DOCUMENT\_POSITION\_PRECEDING: Short\n  
val DOCUMENT\_POSITION\_FOLLOWING: Short\n val DOCUMENT\_POSITION\_CONTAINS: Short\n



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    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\npublic external abstract class
SVGMarkerElement : SVGElement, SVGFitToViewBox {\n    open val refX: SVGAnimatedLength\n    open val
refY: SVGAnimatedLength\n    open val markerUnits: SVGAnimatedEnumeration\n    open val markerWidth:
SVGAnimatedLength\n    open val markerHeight: SVGAnimatedLength\n    open val orientType:
SVGAnimatedEnumeration\n    open val orientAngle: SVGAnimatedAngle\n    open var orient: String\n    fun
setOrientToAuto()\n    fun setOrientToAngle(angle: SVGAngle)\n}\n\ncompanion object {\n    val
SVG_MARKERUNITS_UNKNOWN: Short\n    val SVG_MARKERUNITS_USERSPACEONUSE: Short\n
val SVG_MARKERUNITS_STROKEWIDTH: Short\n    val SVG_MARKER_ORIENT_UNKNOWN: Short\n
val SVG_MARKER_ORIENT_AUTO: Short\n    val SVG_MARKER_ORIENT_ANGLE: Short\n    val
ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val
CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE:
Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[SVGSolidcolorElement](https://developer.mozilla.org/en/docs/Web/API/SVGSolidcolorElement) to Kotlin\n
*\n\npublic external abstract class SVGSolidcolorElement : SVGElement {\n    companion object {\n    val
ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val
CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE:
Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[SVGGradientElement](https://developer.mozilla.org/en/docs/Web/API/SVGGradientElement) to Kotlin\n
*\n\npublic external abstract class SVGGradientElement : SVGElement, SVGURIReference, SVGUnitTypes {\n
open val gradientUnits: SVGAnimatedEnumeration\n    open val gradientTransform: SVGAnimatedTransformList\n
open val spreadMethod: SVGAnimatedEnumeration\n}\n\ncompanion object {\n    val
SVG_SPREADMETHOD_UNKNOWN: Short\n    val SVG_SPREADMETHOD_PAD: Short\n    val
SVG_SPREADMETHOD_REFLECT: Short\n    val SVG_SPREADMETHOD_REPEAT: Short\n    val
SVG_UNIT_TYPE_UNKNOWN: Short\n    val SVG_UNIT_TYPE_USERSPACEONUSE: Short\n    val
SVG_UNIT_TYPE_OBJECTBOUNDINGBOX: Short\n    val ELEMENT_NODE: Short\n    val
ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val
ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val
PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[SVGLinearGradientElement](https://developer.mozilla.org/en/docs/Web/API/SVGLinearGradientElement) to

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Kotlin\n */\npublic external abstract class SVGLinearGradientElement : SVGGradientElement {\n    open val x1:
SVGAnimatedLength\n    open val y1: SVGAnimatedLength\n    open val x2: SVGAnimatedLength\n    open val
y2: SVGAnimatedLength\n\n    companion object {\n        val SVG_SPREADMETHOD_UNKNOWN: Short\n        val SVG_SPREADMETHOD_PAD: Short\n        val SVG_SPREADMETHOD_REFLECT: Short\n        val
SVG_SPREADMETHOD_REPEAT: Short\n        val SVG_UNIT_TYPE_UNKNOWN: Short\n        val
SVG_UNIT_TYPE_USERSPACEONUSE: Short\n        val SVG_UNIT_TYPE_OBJECTBOUNDINGBOX:
Short\n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n
        val CDATA_SECTION_NODE: Short\n        val ENTITY_REFERENCE_NODE: Short\n        val
ENTITY_NODE: Short\n        val PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE:
Short\n        val DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[SVGRadialGradientElement](https://developer.mozilla.org/en/docs/Web/API/SVGRadialGradientElement) to
Kotlin\n */\npublic external abstract class SVGRadialGradientElement : SVGGradientElement {\n    open val cx:
SVGAnimatedLength\n    open val cy: SVGAnimatedLength\n    open val r: SVGAnimatedLength\n    open val fx:
SVGAnimatedLength\n    open val fy: SVGAnimatedLength\n    open val fr: SVGAnimatedLength\n\n    companion
object {\n        val SVG_SPREADMETHOD_UNKNOWN: Short\n        val SVG_SPREADMETHOD_PAD:
Short\n        val SVG_SPREADMETHOD_REFLECT: Short\n        val SVG_SPREADMETHOD_REPEAT:
Short\n        val SVG_UNIT_TYPE_UNKNOWN: Short\n        val SVG_UNIT_TYPE_USERSPACEONUSE:
Short\n        val SVG_UNIT_TYPE_OBJECTBOUNDINGBOX: Short\n        val ELEMENT_NODE: Short\n
        val ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n
        val ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE: Short\n        val
PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\npublic external abstract class
SVGMeshGradientElement : SVGGradientElement {\n    companion object {\n        val
SVG_SPREADMETHOD_UNKNOWN: Short\n        val SVG_SPREADMETHOD_PAD: Short\n        val
SVG_SPREADMETHOD_REFLECT: Short\n        val SVG_SPREADMETHOD_REPEAT: Short\n        val
SVG_UNIT_TYPE_UNKNOWN: Short\n        val SVG_UNIT_TYPE_USERSPACEONUSE: Short\n        val
SVG_UNIT_TYPE_OBJECTBOUNDINGBOX: Short\n        val ELEMENT_NODE: Short\n        val
ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val
ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE: Short\n        val
PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\npublic external abstract class
SVGMeshrowElement : SVGElement {\n    companion object {\n        val ELEMENT_NODE: Short\n        val
ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val

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ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val
PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\npublic external abstract class
SVGMeshpatchElement : SVGElement {\n    companion object {\n    val ELEMENT_NODE: Short\n    val
ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val
ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val
PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[SVGStopElement](https://developer.mozilla.org/en/docs/Web/API/SVGStopElement) to Kotlin\n */\npublic
external abstract class SVGStopElement : SVGElement {\n    open val offset: SVGAnimatedNumber\n\n
companion object {\n    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val
TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE:
Short\n    val ENTITY_NODE: Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val
COMMENT_NODE: Short\n    val DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n
    val DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[SVGPatternElement](https://developer.mozilla.org/en/docs/Web/API/SVGPatternElement) to Kotlin\n */\npublic
external abstract class SVGPatternElement : SVGElement, SVGFitToViewBox, SVGURIReference,
SVGUnitTypes {\n    open val patternUnits: SVGAnimatedEnumeration\n    open val patternContentUnits:
SVGAnimatedEnumeration\n    open val patternTransform: SVGAnimatedTransformList\n    open val x:
SVGAnimatedLength\n    open val y: SVGAnimatedLength\n    open val width: SVGAnimatedLength\n    open val
height: SVGAnimatedLength\n\n    companion object {\n    val SVG_UNIT_TYPE_UNKNOWN: Short\n
    val SVG_UNIT_TYPE_USERSPACEONUSE: Short\n    val SVG_UNIT_TYPE_OBJECTBOUNDINGBOX:
Short\n    val ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n
    val CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val
ENTITY_NODE: Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE:
Short\n    val DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\npublic external abstract class
SVGHatchElement : SVGElement {\n    companion object {\n    val ELEMENT_NODE: Short\n    val
ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val
ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val

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PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\npublic external abstract class
SVGHatchpathElement : SVGElement {\n    companion object {\n        val ELEMENT_NODE: Short\n    val
ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val
ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val
PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[SVGCursorElement](https://developer.mozilla.org/en/docs/Web/API/SVGCursorElement) to Kotlin\n */\n\npublic
external abstract class SVGCursorElement : SVGElement, SVGURIReference {\n    open val x:
SVGAnimatedLength\n    open val y: SVGAnimatedLength\n\n    companion object {\n        val
ELEMENT_NODE: Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val
CDATA_SECTION_NODE: Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE:
Short\n    val PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[SVGScriptElement](https://developer.mozilla.org/en/docs/Web/API/SVGScriptElement) to Kotlin\n */\n\npublic
external abstract class SVGScriptElement : SVGElement, SVGURIReference, HTMLOrSVGScriptElement {\n
    open var type: String\n    open var crossOrigin: String?\n\n    companion object {\n        val ELEMENT_NODE:
Short\n    val ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE:
Short\n    val ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val
PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }\n}\n\n/**\n * Exposes the JavaScript
[SVGAEElement](https://developer.mozilla.org/en/docs/Web/API/SVGAEElement) to Kotlin\n */\n\npublic external
abstract class SVGAEElement : SVGGraphicsElement, SVGURIReference {\n    open val target:
SVGAnimatedString\n    open val download: SVGAnimatedString\n    open val rel: SVGAnimatedString\n    open
val relList: SVGAnimatedString\n    open val hreflang: SVGAnimatedString\n    open val type:
SVGAnimatedString\n\n    companion object {\n        val ELEMENT_NODE: Short\n    val
ATTRIBUTE_NODE: Short\n    val TEXT_NODE: Short\n    val CDATA_SECTION_NODE: Short\n    val
ENTITY_REFERENCE_NODE: Short\n    val ENTITY_NODE: Short\n    val

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PROCESSING_INSTRUCTION_NODE: Short\n    val COMMENT_NODE: Short\n    val
DOCUMENT_NODE: Short\n    val DOCUMENT_TYPE_NODE: Short\n    val
DOCUMENT_FRAGMENT_NODE: Short\n    val NOTATION_NODE: Short\n    val
DOCUMENT_POSITION_DISCONNECTED: Short\n    val DOCUMENT_POSITION_PRECEDING: Short\n
    val DOCUMENT_POSITION_FOLLOWING: Short\n    val DOCUMENT_POSITION_CONTAINS: Short\n
    val DOCUMENT_POSITION_CONTAINED_BY: Short\n    val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }n}\n\n/**\n * Exposes the JavaScript
[SVGViewElement](https://developer.mozilla.org/en/docs/Web/API/SVGViewElement) to Kotlin\n */\npublic
external abstract class SVGViewElement : SVGElement, SVGFitToViewBox, SVGZoomAndPan {\n    companion
object {\n        val SVG_ZOOMANDPAN_UNKNOWN: Short\n        val SVG_ZOOMANDPAN_DISABLE:
Short\n        val SVG_ZOOMANDPAN_MAGNIFY: Short\n        val ELEMENT_NODE: Short\n        val
ATTRIBUTE_NODE: Short\n        val TEXT_NODE: Short\n        val CDATA_SECTION_NODE: Short\n        val
ENTITY_REFERENCE_NODE: Short\n        val ENTITY_NODE: Short\n        val
PROCESSING_INSTRUCTION_NODE: Short\n        val COMMENT_NODE: Short\n        val
DOCUMENT_NODE: Short\n        val DOCUMENT_TYPE_NODE: Short\n        val
DOCUMENT_FRAGMENT_NODE: Short\n        val NOTATION_NODE: Short\n        val
DOCUMENT_POSITION_DISCONNECTED: Short\n        val DOCUMENT_POSITION_PRECEDING: Short\n
        val DOCUMENT_POSITION_FOLLOWING: Short\n        val DOCUMENT_POSITION_CONTAINS: Short\n
        val DOCUMENT_POSITION_CONTAINED_BY: Short\n        val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n    }n}\n\n"/*\n * Copyright 2010-2019
JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the
Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\n// NOTE: THIS FILE IS AUTO-
GENERATED, DO NOT EDIT!\n// See github.com/kotlin/dukat for details\n\npackage org.w3c.files\n\nimport
kotlin.js.*\nimport org.khronos.webgl.*\nimport org.w3c.css.masking.*\nimport org.w3c.dom.*\nimport
org.w3c.dom.clipboard.*\nimport org.w3c.dom.css.*\nimport org.w3c.dom.events.*\nimport
org.w3c.dom.mediacapture.*\nimport org.w3c.dom.parsing.*\nimport org.w3c.dom.pointerevents.*\nimport
org.w3c.dom.svg.*\nimport org.w3c.dom.url.*\nimport org.w3c.fetch.*\nimport org.w3c.notifications.*\nimport
org.w3c.performance.*\nimport org.w3c.workers.*\nimport org.w3c.xhr.*\n\n/**\n * Exposes the JavaScript
[Blob](https://developer.mozilla.org/en/docs/Web/API/Blob) to Kotlin\n */\n\npublic external open class
Blob(blobParts: Array<dynamic> = definedExternally, options: BlobPropertyBag = definedExternally) :
ImageBitmapSource {\n    open val size: Number\n    open val type: String\n    open val isClosed: Boolean\n    fun
slice(start: Int = definedExternally, end: Int = definedExternally, contentType: String = definedExternally): Blob\n
fun close()\n}\n\npublic external interface BlobPropertyBag {\n    var type: String? /* = \"\" */\n    get() =
definedExternally\n    set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
BlobPropertyBag(type: String? = \"\"): BlobPropertyBag {\n    val o = js(\"({})\")\n    o[\"type\"] = type\n    return
o\n}\n\n/**\n * Exposes the JavaScript [File](https://developer.mozilla.org/en/docs/Web/API/File) to Kotlin\n
*/\n\npublic external open class File(fileBits: Array<dynamic>, fileName: String, options: FilePropertyBag =
definedExternally) : Blob {\n    open val name: String\n    open val lastModified: Int\n}\n\npublic external interface
FilePropertyBag : BlobPropertyBag {\n    var lastModified: Int?\n    get() = definedExternally\n    set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun FilePropertyBag(lastModified: Int? =
undefined, type: String? = \"\"): FilePropertyBag {\n    val o = js(\"({})\")\n    o[\"lastModified\"] = lastModified\n
o[\"type\"] = type\n    return o\n}\n\n/**\n * Exposes the JavaScript
[FileList](https://developer.mozilla.org/en/docs/Web/API/FileList) to Kotlin\n */\n\npublic external abstract class
FileList : ItemArrayLike<File> {\n    override fun item(index: Int): File?\n}\n\n@kotlin.internal.InlineOnly\npublic
inline operator fun FileList.get(index: Int): File? = asDynamic()[index]\n\n/**\n * Exposes the JavaScript
[FileReader](https://developer.mozilla.org/en/docs/Web/API/FileReader) to Kotlin\n */\n\npublic external open class
FileReader : EventTarget {\n    open val readyState: Short\n    open val result: dynamic\n    open val error:
dynamic\n    var onloadstart: ((ProgressEvent) -> dynamic)?\n    var onprogress: ((ProgressEvent) -> dynamic)?\n

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var onload: ((Event) -> dynamic)?\n  var onabort: ((Event) -> dynamic)?\n  var onerror: ((Event) -> dynamic)?\n
var onloadend: ((Event) -> dynamic)?\n  fun readAsArrayBuffer(blob: Blob)\n  fun readAsBinaryString(blob:
Blob)\n  fun readAsText(blob: Blob, label: String = definedExternally)\n  fun readAsDataURL(blob: Blob)\n
fun abort()\n\n companion object {\n    val EMPTY: Short\n    val LOADING: Short\n    val DONE:
Short\n  }\n}\n\n**\n * Exposes the JavaScript
[FileReaderSync](https://developer.mozilla.org/en/docs/Web/API/FileReaderSync) to Kotlin\n *\npublic external
open class FileReaderSync {\n  fun readAsArrayBuffer(blob: Blob): ArrayBuffer\n  fun readAsBinaryString(blob:
Blob): String\n  fun readAsText(blob: Blob, label: String = definedExternally): String\n  fun
readAsDataURL(blob: Blob): String\n},"/*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming
Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n *\n\n// NOTE: THIS FILE IS AUTO-GENERATED, DO NOT EDIT!\n\n// See
github.com/kotlin/dukat for details\n\npackage org.w3c.notifications\n\nimport kotlin.js.*\nimport
org.khronos.webgl.*\nimport org.w3c.css.masking.*\nimport org.w3c.dom.*\nimport
org.w3c.dom.clipboard.*\nimport org.w3c.dom.css.*\nimport org.w3c.dom.events.*\nimport
org.w3c.dom.mediacapture.*\nimport org.w3c.dom.parsing.*\nimport org.w3c.dom.pointerevents.*\nimport
org.w3c.dom.svg.*\nimport org.w3c.dom.url.*\nimport org.w3c.fetch.*\nimport org.w3c.files.*\nimport
org.w3c.performance.*\nimport org.w3c.workers.*\nimport org.w3c.xhr.*\n\n**\n * Exposes the JavaScript
[Notification](https://developer.mozilla.org/en/docs/Web/API/Notification) to Kotlin\n *\npublic external open
class Notification(title: String, options: NotificationOptions = definedExternally) : EventTarget {\n  var onclick:
((MouseEvent) -> dynamic)?\n  var onerror: ((Event) -> dynamic)?\n  open val title: String\n  open val dir:
NotificationDirection\n  open val lang: String\n  open val body: String\n  open val tag: String\n  open val
image: String\n  open val icon: String\n  open val badge: String\n  open val sound: String\n  open val vibrate:
Array<out Int>\n  open val timestamp: Number\n  open val renotify: Boolean\n  open val silent: Boolean\n
open val noscreen: Boolean\n  open val requireInteraction: Boolean\n  open val sticky: Boolean\n  open val data:
Any?\n  open val actions: Array<out NotificationAction>\n  fun close()\n\n  companion object {\n    val
permission: NotificationPermission\n    val maxActions: Int\n    fun requestPermission(deprecatedCallback:
(NotificationPermission) -> Unit = definedExternally): Promise<NotificationPermission>\n  }\n}\n\npublic
external interface NotificationOptions {\n  var dir: NotificationDirection? /* = NotificationDirection.AUTO */\n
get() = definedExternally\n  set(value) = definedExternally\n  var lang: String? /* = "" */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var body: String? /* = "" */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var tag: String? /* = "" */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var image: String?\n  get() = definedExternally\n
set(value) = definedExternally\n  var icon: String?\n  get() = definedExternally\n  set(value) =
definedExternally\n  var badge: String?\n  get() = definedExternally\n  set(value) = definedExternally\n
var sound: String?\n  get() = definedExternally\n  set(value) = definedExternally\n  var vibrate: dynamic\n
get() = definedExternally\n  set(value) = definedExternally\n  var timestamp: Number?\n  get() =
definedExternally\n  set(value) = definedExternally\n  var renotify: Boolean? /* = false */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var silent: Boolean? /* = false */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var noscreen: Boolean? /* = false */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var requireInteraction: Boolean? /* = false */\n  get()
= definedExternally\n  set(value) = definedExternally\n  var sticky: Boolean? /* = false */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var data: Any? /* = null */\n  get() =
definedExternally\n  set(value) = definedExternally\n  var actions: Array<NotificationAction>? /* = arrayOf()
*/\n  get() = definedExternally\n  set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic
inline fun NotificationOptions(dir: NotificationDirection? = NotificationDirection.AUTO, lang: String? = "", body:
String? = "", tag: String? = "", image: String? = undefined, icon: String? = undefined, badge: String? = undefined,
sound: String? = undefined, vibrate: dynamic = undefined, timestamp: Number? = undefined, renotify: Boolean? =
false, silent: Boolean? = false, noscreen: Boolean? = false, requireInteraction: Boolean? = false, sticky: Boolean? =

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false, data: Any? = null, actions: Array<NotificationAction>? = arrayOf(): NotificationOptions {
    val o = js("{}")
    o["dir"] = dir
    o["lang"] = lang
    o["body"] = body
    o["tag"] = tag
    o["image"] = image
    o["icon"] = icon
    o["badge"] = badge
    o["sound"] = sound
    o["vibrate"] = vibrate
    o["timestamp"] = timestamp
    o["renotify"] = renotify
    o["silent"] = silent
    o["noscreen"] = noscreen
    o["requireInteraction"] = requireInteraction
    o["sticky"] = sticky
    o["data"] = data
    o["actions"] = actions
    return o
}

public external interface NotificationAction {
    var action: String?
    get() = definedExternally
    set(value) = definedExternally
    var title: String?
    get() = definedExternally
    set(value) = definedExternally
    var icon: String?
    get() = definedExternally
    set(value) = definedExternally
}

@kotlin.internal.InlineOnly
public inline fun NotificationAction(action: String?, title: String?, icon: String? = undefined): NotificationAction {
    val o = js("{}")
    o["action"] = action
    o["title"] = title
    o["icon"] = icon
    return o
}

public external interface GetNotificationOptions {
    var tag: String? /* = "" */
    get() = definedExternally
    set(value) = definedExternally
}

@kotlin.internal.InlineOnly
public inline fun GetNotificationOptions(tag: String? = ""): GetNotificationOptions {
    val o = js("{}")
    o["tag"] = tag
    return o
}

/** Exposes the JavaScript [NotificationEvent](https://developer.mozilla.org/en/docs/Web/API/NotificationEvent) to Kotlin */
public external open class NotificationEvent(type: String, eventInitDict: NotificationEventInit) :
    ExtendableEvent {
    open val notification: Notification
    open val action: String

    companion object {
        val NONE: Short
        val CAPTURING_PHASE: Short
        val AT_TARGET: Short
        val BUBBLING_PHASE: Short
    }

    public external interface NotificationEventInit : ExtendableEventInit {
        var notification: Notification?
        get() = definedExternally
        set(value) = definedExternally
        var action: String? /* = "" */
        get() = definedExternally
        set(value) = definedExternally
    }

    @kotlin.internal.InlineOnly
    public inline fun NotificationEventInit(notification: Notification?, action: String? = "", bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? = false): NotificationEventInit {
        val o = js("{}")
        o["notification"] = notification
        o["action"] = action
        o["bubbles"] = bubbles
        o["cancelable"] = cancelable
        o["composed"] = composed
        return o
    }

    /* please, don't implement this interface! */
}

@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")
public external interface NotificationPermission {
    companion object {
        public inline val NotificationPermission.Companion.DEFAULT: NotificationPermission
        get() = "default".asDynamic().unsafeCast<NotificationPermission>()

        public inline val NotificationPermission.Companion.DENIED: NotificationPermission
        get() = "denied".asDynamic().unsafeCast<NotificationPermission>()

        public inline val NotificationPermission.Companion.GRANTED: NotificationPermission
        get() = "granted".asDynamic().unsafeCast<NotificationPermission>()

        /* please, don't implement this interface! */
    }

    @Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")
    public external interface NotificationDirection {
        companion object {
            public inline val NotificationDirection.Companion.AUTO: NotificationDirection
            get() = "auto".asDynamic().unsafeCast<NotificationDirection>()

            public inline val NotificationDirection.Companion.LTR: NotificationDirection
            get() = "ltr".asDynamic().unsafeCast<NotificationDirection>()

            public inline val NotificationDirection.Companion.RTL: NotificationDirection
            get() = "rtl".asDynamic().unsafeCast<NotificationDirection>()
        }
    }
}

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 * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.
 */
@n// NOTE: THIS FILE IS AUTO-GENERATED, DO NOT EDIT!
n// See github.com/kotlin/dukat for details
npackage org.w3c.workers
nimport kotlin.js.*
nimport org.khronos.webgl.*
nimport org.w3c.css.masking.*
nimport org.w3c.dom.*
nimport org.w3c.dom.clipboard.*
nimport org.w3c.dom.css.*
nimport org.w3c.dom.events.*
nimport org.w3c.dom.mediacapture.*
nimport org.w3c.dom.parsing.*
nimport org.w3c.dom.pointerevents.*
nimport org.w3c.dom.svg.*
nimport org.w3c.dom.url.*
nimport org.w3c.fetch.*
nimport org.w3c.files.*
nimport

```

```

org.w3c.notifications.*\nimport org.w3c.performance.*\nimport org.w3c.xhr.*\n\n/**\n * Exposes the JavaScript
[ServiceWorker](https://developer.mozilla.org/en/docs/Web/API/ServiceWorker) to Kotlin\n *\npublic external
abstract class ServiceWorker : EventTarget, AbstractWorker, UnionMessagePortOrServiceWorker,
UnionClientOrMessagePortOrServiceWorker {\n    open val scriptURL: String\n    open val state:
ServiceWorkerState\n    open var onstatechange: ((Event) -> dynamic)?\n    fun postMessage(message: Any?,
transfer: Array<dynamic> = definedExternally)\n}\n\n/**\n * Exposes the JavaScript
[ServiceWorkerRegistration](https://developer.mozilla.org/en/docs/Web/API/ServiceWorkerRegistration) to
Kotlin\n *\npublic external abstract class ServiceWorkerRegistration : EventTarget {\n    open val installing:
ServiceWorker?\n    open val waiting: ServiceWorker?\n    open val active: ServiceWorker?\n    open val scope:
String\n    open var onupdatefound: ((Event) -> dynamic)?\n    open val APISpace: dynamic\n    fun update():
Promise<Unit>\n    fun unregister(): Promise<Boolean>\n    fun showNotification(title: String, options:
NotificationOptions = definedExternally): Promise<Unit>\n    fun getNotifications(filter: GetNotificationOptions =
definedExternally): Promise<Array<Notification>>\n    fun methodName(): Promise<dynamic>\n}\n\n/**\n *
Exposes the JavaScript
[ServiceWorkerContainer](https://developer.mozilla.org/en/docs/Web/API/ServiceWorkerContainer) to Kotlin\n
*\npublic external abstract class ServiceWorkerContainer : EventTarget {\n    open val controller:
ServiceWorker?\n    open val ready: Promise<ServiceWorkerRegistration>\n    open var oncontrollerchange:
((Event) -> dynamic)?\n    open var onmessage: ((MessageEvent) -> dynamic)?\n    fun register(scriptURL: String,
options: RegistrationOptions = definedExternally): Promise<ServiceWorkerRegistration>\n    fun
getRegistration(clientURL: String = definedExternally): Promise<Any?>\n    fun getRegistrations():
Promise<Array<ServiceWorkerRegistration>>\n    fun startMessages()\n}\n\npublic external interface
RegistrationOptions {\n    var scope: String?\n    get() = definedExternally\n    set(value) = definedExternally\n
    var type: WorkerType? /* = WorkerType.CLASSIC */\n    get() = definedExternally\n    set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun RegistrationOptions(scope: String? =
undefined, type: WorkerType? = WorkerType.CLASSIC): RegistrationOptions {\n    val o = js("{}")\n    o["scope"] = scope\n    o["type"] = type\n    return o\n}\n\n/**\n * Exposes the JavaScript
[ServiceWorkerMessageEvent](https://developer.mozilla.org/en/docs/Web/API/ServiceWorkerMessageEvent) to
Kotlin\n *\npublic external open class ServiceWorkerMessageEvent(type: String, eventInitDict:
ServiceWorkerMessageEventInit = definedExternally) : Event {\n    open val data: Any?\n    open val origin:
String\n    open val lastEventId: String\n    open val source: UnionMessagePortOrServiceWorker?\n    open val
ports: Array<out MessagePort>?\n\n    companion object {\n        val NONE: Short\n        val
CAPTURING_PHASE: Short\n        val AT_TARGET: Short\n        val BUBBLING_PHASE: Short\n    }\n\n    public external interface ServiceWorkerMessageEventInit : EventInit {\n        var data: Any?\n        get() =
definedExternally\n        set(value) = definedExternally\n        var origin: String?\n        get() = definedExternally\n
set(value) = definedExternally\n        var lastEventId: String?\n        get() = definedExternally\n        set(value) =
definedExternally\n        var source: UnionMessagePortOrServiceWorker?\n        get() = definedExternally\n
set(value) = definedExternally\n        var ports: Array<MessagePort>?\n        get() = definedExternally\n        set(value)
= definedExternally\n    }\n\n    @kotlin.internal.InlineOnly\n    public inline fun ServiceWorkerMessageEventInit(data:
Any? = undefined, origin: String? = undefined, lastEventId: String? = undefined, source:
UnionMessagePortOrServiceWorker? = undefined, ports: Array<MessagePort>? = undefined, bubbles: Boolean? =
false, cancelable: Boolean? = false, composed: Boolean? = false): ServiceWorkerMessageEventInit {\n        val o =
js("{}")\n        o["data"] = data\n        o["origin"] = origin\n        o["lastEventId"] = lastEventId\n        o["source"] =
source\n        o["ports"] = ports\n        o["bubbles"] = bubbles\n        o["cancelable"] = cancelable\n        o["composed"] =
composed\n        return o\n    }\n\n    /**\n     * Exposes the JavaScript
[ServiceWorkerGlobalScope](https://developer.mozilla.org/en/docs/Web/API/ServiceWorkerGlobalScope) to
Kotlin\n     *\n     public external abstract class ServiceWorkerGlobalScope : WorkerGlobalScope {\n         open val clients:
Clients\n         open val registration: ServiceWorkerRegistration\n         open var oninstall: ((Event) -> dynamic)?\n         open
var onactivate: ((Event) -> dynamic)?\n         open var onfetch: ((FetchEvent) -> dynamic)?\n         open var

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onforeignfetch: ((Event) -> dynamic)?\n  open var onmessage: ((MessageEvent) -> dynamic)?\n  open var
onnotificationclick: ((NotificationEvent) -> dynamic)?\n  open var onnotificationclose: ((NotificationEvent) ->
dynamic)?\n  open var onfunctionalevent: ((Event) -> dynamic)?\n  fun skipWaiting():
Promise<Unit>\n}\n\n/**\n * Exposes the JavaScript
[Client](https://developer.mozilla.org/en/docs/Web/API/Client) to Kotlin\n *\npublic external abstract class Client :
UnionClientOrMessagePortOrServiceWorker {\n  open val url: String\n  open val frameType: FrameType\n
open val id: String\n  fun postMessage(message: Any?, transfer: Array<dynamic> = definedExternally)\n}\n\n/**\n
* Exposes the JavaScript [WindowClient](https://developer.mozilla.org/en/docs/Web/API/WindowClient) to
Kotlin\n *\npublic external abstract class WindowClient : Client {\n  open val visibilityState: dynamic\n  open
val focused: Boolean\n  fun focus(): Promise<WindowClient>\n  fun navigate(url: String):
Promise<WindowClient>\n}\n\n/**\n * Exposes the JavaScript
[Clients](https://developer.mozilla.org/en/docs/Web/API/Clients) to Kotlin\n *\npublic external abstract class
Clients {\n  fun get(id: String): Promise<Any?>\n  fun matchAll(options: ClientQueryOptions =
definedExternally): Promise<Array<Client>>\n  fun openWindow(url: String): Promise<WindowClient?>\n  fun
claim(): Promise<Unit>\n}\n\npublic external interface ClientQueryOptions {\n  var includeUncontrolled:
Boolean? /* = false */\n  get() = definedExternally\n  set(value) = definedExternally\n  var type:
ClientType? /* = ClientType.WINDOW */\n  get() = definedExternally\n  set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun ClientQueryOptions(includeUncontrolled:
Boolean? = false, type: ClientType? = ClientType.WINDOW): ClientQueryOptions {\n  val o = js("{}")\n
o["includeUncontrolled"] = includeUncontrolled\n  o["type"] = type\n  return o\n}\n\n/**\n * Exposes the
JavaScript [ExtendableEvent](https://developer.mozilla.org/en/docs/Web/API/ExtendableEvent) to Kotlin\n
*\npublic external open class ExtendableEvent(type: String, eventInitDict: ExtendableEventInit =
definedExternally) : Event {\n  fun waitUntil(f: Promise<Any?>)\n\n  companion object {\n    val NONE:
Short\n    val CAPTURING_PHASE: Short\n    val AT_TARGET: Short\n    val BUBBLING_PHASE:
Short\n  }\n}\n\npublic external interface ExtendableEventInit : EventInit\n\n@kotlin.internal.InlineOnly\npublic
inline fun ExtendableEventInit(bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? =
false): ExtendableEventInit {\n  val o = js("{}")\n  o["bubbles"] = bubbles\n  o["cancelable"] =
cancelable\n  o["composed"] = composed\n  return o\n}\n\n/**\n * Exposes the JavaScript
[InstallEvent](https://developer.mozilla.org/en/docs/Web/API/InstallEvent) to Kotlin\n *\npublic external open
class InstallEvent(type: String, eventInitDict: ExtendableEventInit = definedExternally) : ExtendableEvent {\n  fun
registerForeignFetch(options: ForeignFetchOptions)\n\n  companion object {\n    val NONE: Short\n    val
CAPTURING_PHASE: Short\n    val AT_TARGET: Short\n    val BUBBLING_PHASE: Short\n  }\n}\n\npublic external interface ForeignFetchOptions {\n  var scopes: Array<String>?\n  get() =
definedExternally\n  set(value) = definedExternally\n  var origins: Array<String>?\n  get() =
definedExternally\n  set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
ForeignFetchOptions(scopes: Array<String>?, origins: Array<String>?): ForeignFetchOptions {\n  val o =
js("{}")\n  o["scopes"] = scopes\n  o["origins"] = origins\n  return o\n}\n\n/**\n * Exposes the JavaScript
[FetchEvent](https://developer.mozilla.org/en/docs/Web/API/FetchEvent) to Kotlin\n *\npublic external open class
FetchEvent(type: String, eventInitDict: FetchEventInit) : ExtendableEvent {\n  open val request: Request\n  open
val clientId: String?\n  open val isReload: Boolean\n  fun respondWith(r: Promise<Response>)\n\n  companion
object {\n    val NONE: Short\n    val CAPTURING_PHASE: Short\n    val AT_TARGET: Short\n    val
BUBBLING_PHASE: Short\n  }\n}\n\npublic external interface FetchEventInit : ExtendableEventInit {\n  var
request: Request?\n  get() = definedExternally\n  set(value) = definedExternally\n  var clientId: String? /* =
null */\n  get() = definedExternally\n  set(value) = definedExternally\n  var isReload: Boolean? /* = false
*/\n  get() = definedExternally\n  set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic
inline fun FetchEventInit(request: Request?, clientId: String? = null, isReload: Boolean? = false, bubbles: Boolean?
= false, cancelable: Boolean? = false, composed: Boolean? = false): FetchEventInit {\n  val o = js("{}")\n
o["request"] = request\n  o["clientId"] = clientId\n  o["isReload"] = isReload\n  o["bubbles"] = bubbles\n

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o["cancelable"] = cancelable\n  o["composed"] = composed\n  return o\n}\n\npublic external open class
ForeignFetchEvent(type: String, eventInitDict: ForeignFetchEventInit) : ExtendableEvent {\n  open val request:
Request\n  open val origin: String\n  fun respondWith(r: Promise<ForeignFetchResponse>)\n\n  companion
object {\n    val NONE: Short\n    val CAPTURING_PHASE: Short\n    val AT_TARGET: Short\n    val
BUBBLING_PHASE: Short\n  }\n}\n\npublic external interface ForeignFetchEventInit : ExtendableEventInit {\n
var request: Request?\n  get() = definedExternally\n  set(value) = definedExternally\n  var origin: String? /*
= \"null\" */\n  get() = definedExternally\n  set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun ForeignFetchEventInit(request: Request?,
origin: String? = \"null\", bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? = false):
ForeignFetchEventInit {\n  val o = js(\"({})\")\n  o[\"request\"] = request\n  o[\"origin\"] = origin\n
o[\"bubbles\"] = bubbles\n  o[\"cancelable\"] = cancelable\n  o[\"composed\"] = composed\n  return
o\n}\n\npublic external interface ForeignFetchResponse {\n  var response: Response?\n  get() =
definedExternally\n  set(value) = definedExternally\n  var origin: String?\n  get() = definedExternally\n
set(value) = definedExternally\n  var headers: Array<String>?\n  get() = definedExternally\n  set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun ForeignFetchResponse(response:
Response?, origin: String? = undefined, headers: Array<String>? = undefined): ForeignFetchResponse {\n  val o =
js(\"({})\")\n  o[\"response\"] = response\n  o[\"origin\"] = origin\n  o[\"headers\"] = headers\n  return
o\n}\n\n/**\n * Exposes the JavaScript
[ExtendableMessageEvent](https://developer.mozilla.org/en/docs/Web/API/ExtendableMessageEvent) to Kotlin\n
*/\n\npublic external open class ExtendableMessageEvent(type: String, eventInitDict: ExtendableMessageEventInit =
definedExternally) : ExtendableEvent {\n  open val data: Any?\n  open val origin: String\n  open val lastEventId:
String\n  open val source: UnionClientOrMessagePortOrServiceWorker?\n  open val ports: Array<out
MessagePort>?\n\n  companion object {\n    val NONE: Short\n    val CAPTURING_PHASE: Short\n    val
AT_TARGET: Short\n    val BUBBLING_PHASE: Short\n  }\n}\n\npublic external interface
ExtendableMessageEventInit : ExtendableEventInit {\n  var data: Any?\n  get() = definedExternally\n
set(value) = definedExternally\n  var origin: String?\n  get() = definedExternally\n  set(value) =
definedExternally\n  var lastEventId: String?\n  get() = definedExternally\n  set(value) =
definedExternally\n  var source: UnionClientOrMessagePortOrServiceWorker?\n  get() = definedExternally\n
set(value) = definedExternally\n  var ports: Array<MessagePort>?\n  get() = definedExternally\n
set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
ExtendableMessageEventInit(data: Any? = undefined, origin: String? = undefined, lastEventId: String? = undefined,
source: UnionClientOrMessagePortOrServiceWorker? = undefined, ports: Array<MessagePort>? = undefined,
bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? = false): ExtendableMessageEventInit
{\n  val o = js(\"({})\")\n  o[\"data\"] = data\n  o[\"origin\"] = origin\n  o[\"lastEventId\"] = lastEventId\n
o[\"source\"] = source\n  o[\"ports\"] = ports\n  o[\"bubbles\"] = bubbles\n  o[\"cancelable\"] = cancelable\n
o[\"composed\"] = composed\n  return o\n}\n\n/**\n * Exposes the JavaScript
[Cache](https://developer.mozilla.org/en/docs/Web/API/Cache) to Kotlin\n
*/\n\npublic external abstract class Cache
{\n  fun match(request: dynamic, options: CacheQueryOptions = definedExternally): Promise<Any?>\n  fun
matchAll(request: dynamic = definedExternally, options: CacheQueryOptions = definedExternally):
Promise<Array<Response>>\n  fun add(request: dynamic): Promise<Unit>\n  fun addAll(requests:
Array<dynamic>): Promise<Unit>\n  fun put(request: dynamic, response: Response): Promise<Unit>\n  fun
delete(request: dynamic, options: CacheQueryOptions = definedExternally): Promise<Boolean>\n  fun
keys(request: dynamic = definedExternally, options: CacheQueryOptions = definedExternally):
Promise<Array<Request>>\n}\n\npublic external interface CacheQueryOptions {\n  var ignoreSearch: Boolean? /*
= false */\n  get() = definedExternally\n  set(value) = definedExternally\n  var ignoreMethod: Boolean? /*
= false */\n  get() = definedExternally\n  set(value) = definedExternally\n  var ignoreVary: Boolean? /*
= false */\n  get() = definedExternally\n  set(value) = definedExternally\n  var cacheName: String?\n
get() = definedExternally\n  set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun

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CacheQueryOptions(ignoreSearch: Boolean? = false, ignoreMethod: Boolean? = false, ignoreVary: Boolean? =
false, cacheName: String? = undefined): CacheQueryOptions {\n  val o = js("{}")\n  o["ignoreSearch"] =
ignoreSearch\n  o["ignoreMethod"] = ignoreMethod\n  o["ignoreVary"] = ignoreVary\n  o["cacheName"] =
cacheName\n  return o\n}\n\npublic external interface CacheBatchOperation {\n  var type: String?\n  get() =
definedExternally\n  set(value) = definedExternally\n  var request: Request?\n  get() = definedExternally\n
set(value) = definedExternally\n  var response: Response?\n  get() = definedExternally\n  set(value) =
definedExternally\n  var options: CacheQueryOptions?\n  get() = definedExternally\n  set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun CacheBatchOperation(type: String? =
undefined, request: Request? = undefined, response: Response? = undefined, options: CacheQueryOptions? =
undefined): CacheBatchOperation {\n  val o = js("{}")\n  o["type"] = type\n  o["request"] = request\n
o["response"] = response\n  o["options"] = options\n  return o\n}\n\n/**\n * Exposes the JavaScript
[CacheStorage](https://developer.mozilla.org/en/docs/Web/API/CacheStorage) to Kotlin\n */\npublic external
abstract class CacheStorage {\n  fun match(request: dynamic, options: CacheQueryOptions = definedExternally):
Promise<Any?>\n  fun has(cacheName: String): Promise<Boolean>\n  fun open(cacheName: String):
Promise<Cache>\n  fun delete(cacheName: String): Promise<Boolean>\n  fun keys():
Promise<Array<String>>\n}\n\npublic external open class FunctionalEvent : ExtendableEvent {\n  companion
object {\n    val NONE: Short\n    val CAPTURING_PHASE: Short\n    val AT_TARGET: Short\n    val
BUBBLING_PHASE: Short\n  }\n}\n\npublic external interface UnionMessagePortOrServiceWorker\n\npublic
external interface UnionClientOrMessagePortOrServiceWorker\n\n/* please, don't implement this interface!
*/\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\npublic external interface
ServiceWorkerState {\n  companion object\n}\n\npublic inline val ServiceWorkerState.Companion.INSTALLING:
ServiceWorkerState get() = "installing".asDynamic().unsafeCast<ServiceWorkerState>()\n\npublic inline val
ServiceWorkerState.Companion.INSTALLED: ServiceWorkerState get() =
"installed".asDynamic().unsafeCast<ServiceWorkerState>()\n\npublic inline val
ServiceWorkerState.Companion.ACTIVATING: ServiceWorkerState get() =
"activating".asDynamic().unsafeCast<ServiceWorkerState>()\n\npublic inline val
ServiceWorkerState.Companion.ACTIVATED: ServiceWorkerState get() =
"activated".asDynamic().unsafeCast<ServiceWorkerState>()\n\npublic inline val
ServiceWorkerState.Companion.REDUNDANT: ServiceWorkerState get() =
"redundant".asDynamic().unsafeCast<ServiceWorkerState>()\n\n/* please, don't implement this interface!
*/\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\npublic external interface FrameType {\n
companion object\n}\n\npublic inline val FrameType.Companion.AUXILIARY: FrameType get() =
"auxiliary".asDynamic().unsafeCast<FrameType>()\n\npublic inline val FrameType.Companion.TOP_LEVEL:
FrameType get() = "top-level".asDynamic().unsafeCast<FrameType>()\n\npublic inline val
FrameType.Companion.NESTED: FrameType get() = "nested".asDynamic().unsafeCast<FrameType>()\n\npublic
inline val FrameType.Companion.NONE: FrameType get() =
"none".asDynamic().unsafeCast<FrameType>()\n\n/* please, don't implement this interface!
*/\n\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\npublic external interface ClientType {\n
companion object\n}\n\npublic inline val ClientType.Companion.WINDOW: ClientType get() =
>window".asDynamic().unsafeCast<ClientType>()\n\npublic inline val ClientType.Companion.WORKER:
ClientType get() = "worker".asDynamic().unsafeCast<ClientType>()\n\npublic inline val
ClientType.Companion.SHAREDWORKER: ClientType get() =
"sharedworker".asDynamic().unsafeCast<ClientType>()\n\npublic inline val ClientType.Companion.ALL:
ClientType get() = "all".asDynamic().unsafeCast<ClientType>()"/*\n * Copyright 2010-2019 JetBrains s.r.o. and
Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that
can be found in the license/LICENSE.txt file.\n */\n\n// NOTE: THIS FILE IS AUTO-GENERATED, DO NOT
EDIT!\n\n// See github.com/kotlin/dukat for details\n\npackage org.w3c.xr\n\nimport kotlin.js.*\nimport
org.khronos.webgl.*\nimport org.w3c.css.masking.*\nimport org.w3c.dom.*\nimport

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org.w3c.dom.clipboard.\*\nimport org.w3c.dom.css.\*\nimport org.w3c.dom.events.\*\nimport  
 org.w3c.dom.mediacapture.\*\nimport org.w3c.dom.parsing.\*\nimport org.w3c.dom.pointerevents.\*\nimport  
 org.w3c.dom.svg.\*\nimport org.w3c.dom.url.\*\nimport org.w3c.fetch.\*\nimport org.w3c.files.\*\nimport  
 org.w3c.notifications.\*\nimport org.w3c.performance.\*\nimport org.w3c.workers.\*\n\n/\*\*\n \* Exposes the  
 JavaScript

[XMLHttpRequestEventTarget](https://developer.mozilla.org/en/docs/Web/API/XMLHttpRequestEventTarget) to Kotlin\n \*/\npublic external abstract class XMLHttpRequestEventTarget : EventTarget {\n open var onloadstart:

((ProgressEvent) -> dynamic)?\n open var onprogress: ((ProgressEvent) -> dynamic)?\n open var onabort:  
 ((Event) -> dynamic)?\n open var onerror: ((Event) -> dynamic)?\n open var onload: ((Event) -> dynamic)?\n  
 open var ontimeout: ((Event) -> dynamic)?\n open var onloadend: ((Event) -> dynamic)?\n}\n\npublic external

abstract class XMLHttpRequestUpload : XMLHttpRequestEventTarget\n\n/\*\*\n \* Exposes the JavaScript

[XMLHttpRequest](https://developer.mozilla.org/en/docs/Web/API/XMLHttpRequest) to Kotlin\n \*/\npublic  
 external open class XMLHttpRequest : XMLHttpRequestEventTarget {\n var onreadystatechange: ((Event) ->  
 dynamic)?\n open val readyState: Short\n var timeout: Int\n var withCredentials: Boolean\n open val upload:

XMLHttpRequestUpload\n open val responseURL: String\n open val status: Short\n open val statusText:  
 String\n var responseType: XMLHttpRequestResponseType\n open val response: Any?\n open val  
 responseText: String\n open val responseXML: Document?\n fun open(method: String, url: String)\n fun  
 open(method: String, url: String, async: Boolean, username: String? = definedExternally, password: String? =  
 definedExternally)\n fun setRequestHeader(name: String, value: String)\n fun send(body: dynamic =  
 definedExternally)\n fun abort()\n fun getResponseHeader(name: String): String?\n fun  
 getAllResponseHeaders(): String\n fun overrideMimeType(mime: String)\n\n companion object {\n val  
 UNSENT: Short\n val OPENED: Short\n val HEADERS\_RECEIVED: Short\n val LOADING:  
 Short\n val DONE: Short\n }\n}\n\n/\*\*\n \* Exposes the JavaScript

[FormData](https://developer.mozilla.org/en/docs/Web/API/FormData) to Kotlin\n \*/\npublic external open class  
 FormData(form: HTMLFormElement = definedExternally) {\n fun append(name: String, value: String)\n fun  
 append(name: String, value: Blob, filename: String = definedExternally)\n fun delete(name: String)\n fun  
 get(name: String): dynamic\n fun getAll(name: String): Array<dynamic>\n fun has(name: String): Boolean\n  
 fun set(name: String, value: String)\n fun set(name: String, value: Blob, filename: String =  
 definedExternally)\n}\n\n/\*\*\n \* Exposes the JavaScript

[ProgressEvent](https://developer.mozilla.org/en/docs/Web/API/ProgressEvent) to Kotlin\n \*/\npublic external open  
 class ProgressEvent(type: String, eventInitDict: ProgressEventInit = definedExternally) : Event {\n open val  
 lengthComputable: Boolean\n open val loaded: Number\n open val total: Number\n\n companion object {\n  
 val NONE: Short\n val CAPTURING\_PHASE: Short\n val AT\_TARGET: Short\n val  
 BUBBLING\_PHASE: Short\n }\n}\n\npublic external interface ProgressEventInit : EventInit {\n var  
 lengthComputable: Boolean? /\* = false \*/\n get() = definedExternally\n set(value) = definedExternally\n  
 var loaded: Number? /\* = 0 \*/\n get() = definedExternally\n set(value) = definedExternally\n var total:  
 Number? /\* = 0 \*/\n get() = definedExternally\n set(value) =

definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun ProgressEventInit(lengthComputable:  
 Boolean? = false, loaded: Number? = 0, total: Number? = 0, bubbles: Boolean? = false, cancelable: Boolean? =  
 false, composed: Boolean? = false): ProgressEventInit {\n val o = js("{}")\n o["lengthComputable"] =  
 lengthComputable\n o["loaded"] = loaded\n o["total"] = total\n o["bubbles"] = bubbles\n  
 o["cancelable"] = cancelable\n o["composed"] = composed\n return o\n}\n\n/\* please, don't implement this  
 interface! \*/\n@Suppress("NESTED\_CLASS\_IN\_EXTERNAL\_INTERFACE")\npublic external interface

XMLHttpRequestResponseType {\n companion object\n}\n\npublic inline val  
 XMLHttpRequestResponseType.Companion.EMPTY: XMLHttpRequestResponseType get() =  
 \"\".asDynamic().unsafeCast<XMLHttpRequestResponseType>()\n\npublic inline val  
 XMLHttpRequestResponseType.Companion.ARRAYBUFFER: XMLHttpRequestResponseType get() =  
 \"arraybuffer\".asDynamic().unsafeCast<XMLHttpRequestResponseType>()\n\npublic inline val

XMLHttpRequestResponseType.Companion.ARRAYBUFFER: XMLHttpRequestResponseType get() =  
 \"arraybuffer\".asDynamic().unsafeCast<XMLHttpRequestResponseType>()\n\npublic inline val

XMLHttpRequestResponseType.Companion.ARRAYBUFFER: XMLHttpRequestResponseType get() =  
 \"arraybuffer\".asDynamic().unsafeCast<XMLHttpRequestResponseType>()\n\npublic inline val

```

XMLHttpRequestResponseType.Companion.BLOB: XMLHttpRequestResponseType get() =
    \"blob\".asDynamic().unsafeCast<XMLHttpRequestResponseType>()\n\npublic inline val
XMLHttpRequestResponseType.Companion.DOCUMENT: XMLHttpRequestResponseType get() =
    \"document\".asDynamic().unsafeCast<XMLHttpRequestResponseType>()\n\npublic inline val
XMLHttpRequestResponseType.Companion.JSON: XMLHttpRequestResponseType get() =
    \"json\".asDynamic().unsafeCast<XMLHttpRequestResponseType>()\n\npublic inline val
XMLHttpRequestResponseType.Companion.TEXT: XMLHttpRequestResponseType get() =
    \"text\".asDynamic().unsafeCast<XMLHttpRequestResponseType>()\", /*\n * Copyright 2010-2018 JetBrains s.r.o.
and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license
that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin\n\nimport
kotlin.annotation.AnnotationRetention.BINARY\nimport kotlin.annotation.AnnotationRetention.SOURCE\nimport
kotlin.annotation.AnnotationTarget.*\nimport kotlin.internal.RequireKotlin\nimport
kotlin.internal.RequireKotlinVersionKind\nimport kotlin.reflect.KClass\n\n/**\n * Signals that the annotated
annotation class is a marker of an experimental API.\n *\n * Any declaration annotated with that marker is
considered an experimental declaration\n *\n * and its call sites should accept the experimental aspect of it either by
using [UseExperimental],\n *\n * or by being annotated with that marker themselves, effectively causing further
propagation of that experimental aspect.\n *\n * This class is deprecated in favor of a more general approach
provided by [RequiresOptIn]/[OptIn].\n
*\n * @Target(ANNOTATION_CLASS)\n * @Retention(BINARY)\n * @SinceKotlin(\"1.2\")\n * @RequireKotlin(\"1.2.50
\", versionKind = RequireKotlinVersionKind.COMPILER_VERSION)\n * @Deprecated(\"Please use RequiresOptIn
instead.\")\n */\n public annotation class Experimental(val level: Level = Level.ERROR) {\n     /**\n      * Severity of the
diagnostic that should be reported on usages of experimental API which did not explicitly accept the experimental
aspect\n      *\n      * of that API either by using [UseExperimental] or by being annotated with the corresponding marker
annotation.\n      *\n      * public enum class Level {\n          /** Specifies that a warning should be reported on incorrect
usages of this experimental API. *\n          WARNING,\n          /** Specifies that an error should be reported on
incorrect usages of this experimental API. *\n          ERROR,\n          }\n\n/**\n * Allows to use experimental API
denoted by the given markers in the annotated file, declaration, or expression.\n *\n * If a declaration is annotated with
[UseExperimental], its usages are **not** required to opt-in to that experimental API.\n *\n * This class is
deprecated in favor of a more general approach provided by [RequiresOptIn]/[OptIn].\n *\n * @Target(\n     CLASS,
PROPERTY, LOCAL_VARIABLE, VALUE_PARAMETER, CONSTRUCTOR, FUNCTION,
PROPERTY_GETTER, PROPERTY_SETTER, EXPRESSION, FILE,
TYPEALIAS)\n\n@Retention(SOURCE)\n@SinceKotlin(\"1.2\")\n@RequireKotlin(\"1.2.50\", versionKind =
RequireKotlinVersionKind.COMPILER_VERSION)\n@Deprecated(\"Please use OptIn instead.\",
ReplaceWith(\"OptIn(*markerClass)\", \"kotlin.OptIn\"))\n */\n public annotation class UseExperimental(\n     vararg val
markerClass: KClass<out Annotation>)\n\n\n@Target(CLASS, PROPERTY, CONSTRUCTOR, FUNCTION,
TYPEALIAS)\n@Retention(BINARY)\n\ninternal annotation class WasExperimental(\n     vararg val markerClass:
KClass<out Annotation>)\n\n\", \"package kotlin\n\nimport kotlin.annotation.AnnotationTarget.*\n\n/**\n * This
annotation marks the standard library API that is considered experimental and is not subject to the\n * [general
compatibility guarantees](https://kotlinlang.org/docs/reference/evolution/components-stability.html) given for the
standard library:\n * the behavior of such API may be changed or the API may be removed completely in any
further release.\n *\n * > Beware using the annotated API especially if you're developing a library, since your library
might become binary incompatible\n * with the future versions of the standard library.\n *\n * Any usage of a
declaration annotated with `@ExperimentalStdlibApi` must be accepted either by\n * annotating that usage with the
[OptIn] annotation, e.g. `@OptIn(ExperimentalStdlibApi::class)`,\n * or by using the compiler argument `-Xopt-
in=kotlin.ExperimentalStdlibApi`. \n *\n * @Suppress(\"DEPRECATION\")\n */\n @Experimental(level =
Experimental.Level.ERROR)\n @RequiresOptIn(level =
RequiresOptIn.Level.ERROR)\n @Retention(AnnotationRetention.BINARY)\n @Target(\n     CLASS,\n
ANNOTATION_CLASS,\n     PROPERTY,\n     FIELD,\n     LOCAL_VARIABLE,\n     VALUE_PARAMETER,\n

```

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CONSTRUCTOR,\n FUNCTION,\n PROPERTY_GETTER,\n PROPERTY_SETTER,\n
TYPEALIAS\n)\n\n@MustBeDocumented\n@ExperimentalStdlibApi\n@SinceKotlin("1.3") // TODO: Remove
experimental status from itself and advance SinceKotlin to 1.4\npublic annotation class
ExperimentalStdlibApi\n", /*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\npackage kotlin\n\nimport kotlin.annotation.AnnotationTarget.*\nimport
kotlin.experimental.ExperimentalTypeInference\n\n/**\n * Allows to infer generic type arguments of a function
from the calls in the annotated function parameter of that function.\n */\n * When this annotation is placed on a
generic function parameter of a function,\n * it enables to infer the type arguments of that generic function from the
lambda body passed to that parameter.\n */\n * The calls that affect inference are either members of the receiver type
of an annotated function parameter or\n * extensions for that type. The extensions must be themselves annotated
with `@BuilderInference`.\n */\n * Example: we declare\n * ```\n * fun <T> sequence(@BuilderInference block:
suspend SequenceScope<T>().-> Unit): Sequence<T>\n * ```\n * and use it like\n * ```\n * val result = sequence {
yield("result") }\n * ```\n * Here the type argument of the resulting sequence is inferred to `String` from\n * the
argument of the [SequenceScope.yield] function, that is called inside the lambda passed to [sequence].\n */\n * Note:
this annotation is experimental, see [ExperimentalTypeInference] on how to opt-in for it.\n
*/\n\n@Target(VALUE_PARAMETER, FUNCTION,
PROPERTY)\n@Retention(AnnotationRetention.BINARY)\n@SinceKotlin("1.3")\n@ExperimentalTypeInferenc
e\npublic annotation class BuilderInference\n", /*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin
Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be
found in the license/LICENSE.txt file.\n */\n\npackage kotlin\n\nimport
kotlin.annotation.AnnotationTarget.*\nimport kotlin.internal.RequireKotlin\nimport
kotlin.internal.RequireKotlinVersionKind\n\n/**\n * The experimental multiplatform support API marker.\n */\n *
Any usage of a declaration annotated with `@ExperimentalMultiplatform` must be accepted either by\n * annotating
that usage with the [OptIn] annotation, e.g. `@OptIn(ExperimentalMultiplatform::class)`,\n * or by using the
compiler argument `Xopt-in=kotlin.ExperimentalMultiplatform`.\n
*/\n\n@Suppress("DEPRECATION")\n@Experimental\n@RequiresOptIn\n@MustBeDocumented\n@Target(\n
CLASS,\n ANNOTATION_CLASS,\n PROPERTY,\n FIELD,\n LOCAL_VARIABLE,\n
VALUE_PARAMETER,\n CONSTRUCTOR,\n FUNCTION,\n PROPERTY_GETTER,\n
PROPERTY_SETTER,\n
TYPEALIAS\n)\n@Retention(AnnotationRetention.BINARY)\n@RequireKotlin("1.2.50", versionKind =
RequireKotlinVersionKind.COMPILER_VERSION)\npublic annotation class ExperimentalMultiplatform\n\n/**\n
* Marks an expected annotation class that it isn't required to have actual counterparts in all platforms.\n */\n * This
annotation is only applicable to `expect` annotation classes in multi-platform projects and marks that class as
`optional`.\n * Optional expected class is allowed to have no corresponding actual class on the platform. Optional
annotations can only be used\n * to annotate something, not as types in signatures. If an optional annotation has no
corresponding actual class on a platform,\n * the annotation entries where it's used are simply erased when
compiling code on that platform.\n */\n * Note: this annotation is experimental, see [ExperimentalMultiplatform] on
how to opt-in for it.\n
*/\n\n@Target(ANNOTATION_CLASS)\n@Retention(AnnotationRetention.BINARY)\n@ExperimentalMultiplatfor
m\n@RequireKotlin("1.2.50", versionKind = RequireKotlinVersionKind.COMPILER_VERSION)\npublic
annotation class OptionalExpectation\n", /*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming
Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\npackage kotlin\n\nimport
kotlin.annotation.AnnotationRetention.BINARY\nimport kotlin.annotation.AnnotationRetention.SOURCE\nimport
kotlin.annotation.AnnotationTarget.*\nimport kotlin.internal.RequireKotlin\nimport
kotlin.internal.RequireKotlinVersionKind\nimport kotlin.reflect.KClass\n\n/**\n * Signals that the annotated
annotation class is a marker of an API that requires an explicit opt-in.\n */\n * Call sites of any declaration annotated

```

with that marker should opt in to the API either by using [OptIn],\n \* or by being annotated with that marker themselves, effectively causing further propagation of the opt-in requirement.\n \*\n \* This class requires opt-in itself and can only be used with the compiler argument `-Xopt-in=kotlin.RequiresOptIn`.\n *\n * @property message message to be reported on usages of API without an explicit opt-in, or empty string for the default message.\n *`

The default message is: `"This declaration is experimental and its usage should be marked with 'Marker'"` \* or `'@OptIn(Marker::class)'`, where `Marker`` is the opt-in requirement marker.\n \*\n \* @property level specifies how usages of API without an explicit opt-in are reported in code.\n

```
*\n@Target(ANNOTATION_CLASS)\n@Retention(BINARY)\n@SinceKotlin("1.3")\n@RequireKotlin("1.3.70", versionKind = RequireKotlinVersionKind.COMPILER_VERSION)\npublic annotation class RequiresOptIn(\n    val message: String = "",\n    val level: Level = Level.ERROR)\n{\n    /**\n     * Severity of the diagnostic that should be reported on usages which did not explicitly opt into\n     * the API either by using [OptIn] or by being annotated with the corresponding marker annotation.\n     *\n     * public enum class Level {\n     *     /** Specifies that a warning should be reported on incorrect usages of this API. *\n     *     WARNING,\n     *     /** Specifies that an error should be reported on incorrect usages of this API. *\n     *     ERROR,\n     *     }\n}\n/**\n * Allows to use the API denoted by the given markers in the annotated file, declaration, or expression.\n * If a declaration is annotated with [OptIn], its usages are not required to opt in to that API.\n *\n * This class requires opt-in itself and can only be used with the compiler argument -Xopt-in=kotlin.RequiresOptIn`.\n *\n@Target(\n    CLASS, PROPERTY, LOCAL_VARIABLE, VALUE_PARAMETER, CONSTRUCTOR, FUNCTION, PROPERTY_GETTER, PROPERTY_SETTER, EXPRESSION, FILE,
```

```
TYPEALIAS)\n@Retention(SOURCE)\n@SinceKotlin("1.3")\n@RequireKotlin("1.3.70", versionKind = RequireKotlinVersionKind.COMPILER_VERSION)\npublic annotation class OptIn(\n    vararg val markerClass: KClass<out Annotation>)\n"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\npackage kotlin.collections\n\nimport kotlin.js.JsName\n\n/**\n * Provides a skeletal implementation of the read-only [Collection] interface.\n *\n * @param E the type of elements contained in the collection. The collection is covariant on its element type.\n */\n@SinceKotlin("1.1")\npublic abstract class AbstractCollection<out E> protected constructor() : Collection<E> {\n    abstract override val size: Int\n    abstract override fun iterator(): Iterator<E>\n\n    override fun contains(element: @UnsafeVariance E): Boolean = any { it == element }\n\n    override fun containsAll(elements: Collection<@UnsafeVariance E>): Boolean =\n        elements.all { contains(it) } // use when js will support bound refs: elements.all(this::contains)\n\n    override fun isEmpty(): Boolean = size == 0\n\n    override fun toString(): String = joinToString(", ", "[", "]" )\n\n    if (it == this) "(this Collection)" else it.toString()\n}\n\n/**\n * Returns new array of type Array<Any?> with the elements of this collection.\n *\n * @JsName("toArray")\n    protected open fun toArray(): Array<Any?> = copyToArrayImpl(this)\n\n    /**\n     * Fills the provided [array] or creates new array of the same type\n     * and fills it with the elements of this collection.\n     *\n     * protected open fun <T> toArray(array: Array<T>): Array<T> = copyToArrayImpl(this, array)\n}\n"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\npackage kotlin.collections\n\nprivate enum class State {\n    Ready,\n    NotReady,\n    Done,\n    Failed\n}\n\n/**\n * A base class to simplify implementing iterators so that implementations only have to implement [computeNext]\n * to implement the iterator, calling [done] when the iteration is complete.\n */\npublic abstract class AbstractIterator<T> : Iterator<T> {\n    private var state = State.NotReady\n    private var nextValue: T? = null\n\n    override fun hasNext(): Boolean {\n        require(state != State.Failed)\n        return when (state) {\n            State.Done -> false\n            State.Ready -> true\n            else -> tryToComputeNext()\n        }\n    }\n\n    override fun next(): T {\n        if (!hasNext()) throw NoSuchElementException()\n        state = State.NotReady\n        @Suppress("UNCHECKED_CAST")\n        return nextValue as T\n    }\n\n    private fun tryToComputeNext(): Boolean {\n        state = State.Failed\n        computeNext()\n        return state == State.Ready\n    }\n\n    /**\n     * Computes the next item in the iterator.\n     *\n     * This callback method should call one of these two methods:\n     * * [setNext] with the next value of
```





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    val otherIterator = other.iterator()\n        for (elem in c) {\n            val elemOther = otherIterator.next()\n            if (elem != elemOther) {\n                return false\n            }\n            return true\n        }\n    }\n}"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this\n * source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\n * Based on GWT AbstractMap\n * Copyright 2007 Google Inc.\n */\n\npackage kotlin.collections\n\n/**\n * Provides\n * a skeletal implementation of the read-only [Map] interface.\n * The implementor is required to implement\n * [entries] property, which should return read-only set of map entries.\n * @param K the type of map keys. The\n * map is invariant on its key type.\n * @param V the type of map values. The map is covariant on its value type.\n */\n@SinceKotlin("1.1")\npublic abstract class AbstractMap<K, out V> protected constructor() : Map<K, V>\n{\n    override fun containsKey(key: K): Boolean {\n        return implFindEntry(key) != null\n    }\n\n    override\n    fun containsValue(value: @UnsafeVariance V): Boolean = entries.any { it.value == value }\n\n    internal fun\n    containsEntry(entry: Map.Entry<*, *>): Boolean {\n        // since entry comes from @UnsafeVariance parameters it\n        can be virtually anything\n        if (entry !is Map.Entry<*, *>) return false\n        val key = entry.key\n        val value\n        = entry.value\n        val ourValue = get(key)\n        if (value != ourValue) {\n            return false\n        }\n        //\n        Perhaps it was null and we don't contain the key?\n        if (ourValue == null && !containsKey(key)) {\n            return false\n        }\n        return true\n    }\n\n    /**\n     * Compares this map with other instance with the\n     * ordered structural equality.\n     * @return true, if [other] instance is a [Map] of the same size, all entries of\n     * which are contained in the [entries] set of this map.\n     */\n    override fun equals(other: Any?): Boolean {\n        if\n        (other === this) return true\n        if (other !is Map<*, *>) return false\n        if (size != other.size) return false\n        return other.entries.all { containsEntry(it) }\n    }\n\n    override operator fun get(key: K): V? =\n    implFindEntry(key)?.value\n\n    /**\n     * Returns the hash code value for this map.\n     * It is the same as\n     * the hashCode of [entries] set.\n     */\n    override fun hashCode(): Int = entries.hashCode()\n\n    override fun\n    isEmpty(): Boolean = size == 0\n\n    override val size: Int get() = entries.size\n\n    /**\n     * Returns a read-only\n     * [Set] of all keys in this map.\n     * Accessing this property first time creates a keys view from [entries].\n     * All\n     * subsequent accesses just return the created instance.\n     */\n    override val keys: Set<K>\n        get() {\n            if (_keys == null) {\n                _keys = object : AbstractSet<K>() {\n                    override operator fun\n                    contains(element: K): Boolean = containsKey(element)\n\n                    override operator fun iterator(): Iterator<K>\n                    {\n                        val entryIterator = entries.iterator()\n                        return object : Iterator<K> {\n                            override fun hasNext(): Boolean = entryIterator.hasNext()\n                            override fun next(): K =\n                                entryIterator.next().key\n                        }\n                    }\n\n                    override val size: Int get() =\n                        this@AbstractMap.size\n                }\n            }\n            return _keys!!\n        }\n\n    @kotlin.jvm.Volatile\n    private var _keys: Set<K>? = null\n\n    override fun toString(): String = entries.joinToString(", ", "\n", "\n") {\n        toString(it) }\n\n    private fun toString(entry: Map.Entry<K, V>): String = toString(entry.key) + "\n=" +\n    toString(entry.value)\n\n    private fun toString(o: Any?): String = if (o === this) "\n(this Map)\n" else o.toString()\n\n    /**\n     * Returns a read-only [Collection] of all values in this map.\n     * Accessing this property first time\n     * creates a values view from [entries].\n     * All subsequent accesses just return the created instance.\n     */\n    override val values: Collection<V>\n        get() {\n            if (_values == null) {\n                _values = object :\n                AbstractCollection<V>() {\n                    override operator fun contains(element: @UnsafeVariance V): Boolean =\n                    containsValue(element)\n\n                    override operator fun iterator(): Iterator<V> {\n                        val\n                        entryIterator = entries.iterator()\n                        return object : Iterator<V> {\n                            override fun\n                            hasNext(): Boolean = entryIterator.hasNext()\n                            override fun next(): V = entryIterator.next().value\n                        }\n                    }\n\n                    override val size: Int get() = this@AbstractMap.size\n                }\n            }\n            return _values!!\n        }\n\n    @kotlin.jvm.Volatile\n    private var _values: Collection<V>? = null\n\n    private fun implFindEntry(key: K): Map.Entry<K, V>? = entries.firstOrNull { it.key == key }\n\n    internal\n    companion object {\n        internal fun entryHashCode(e: Map.Entry<*, *>): Int = with(e) { (key?.hashCode() ?:\n        0) xor (value?.hashCode() ?: 0) }\n\n        internal fun entryToString(e: Map.Entry<*, *>): String = with(e) {\n        "\n$key=$value\n" }\n\n        internal fun entryEquals(e: Map.Entry<*, *>, other: Any?): Boolean {\n            if (other !is\n            Map.Entry<*, *>) return false\n            return e.key == other.key && e.value == other.value\n        }\n    }\n}

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}\n}\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of
this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*/\npackage kotlin.collections\n\n/**\n * Provides a skeletal implementation of the read-only [Set] interface.\n * \n * This class is intended to help implementing read-only sets so it doesn't support concurrent modification tracking.\n
*\n * @param E the type of elements contained in the set. The set is covariant on its element type.\n
*/\n@SinceKotlin("1.1")\npublic abstract class AbstractSet<out E> protected constructor() :
AbstractCollection<E>(), Set<E> {\n\n    /**\n     * Compares this set with other set instance with the unordered
structural equality.\n     * \n     * @return true, if [other] instance is a [Set] of the same size, all elements of which are
contained in this set.\n     */\n    override fun equals(other: Any?): Boolean {\n        if (other === this) return true\n
        if (other !is Set<*>) return false\n        return setEquals(this, other)\n    }\n\n    /**\n     * Returns the hash code
value for this set.\n     */\n    override fun hashCode(): Int = unorderedHashCode(this)\n\n    internal companion
object {\n        internal fun unorderedHashCode(c: Collection<*>): Int {\n            var hashCode = 0\n            for
(element in c) {\n                hashCode += (element?.hashCode() ?: 0)\n            }\n            return hashCode\n
        }\n\n        internal fun setEquals(c: Set<*>, other: Set<*>): Boolean {\n            if (c.size != other.size) return false\n
            return c.containsAll(other)\n        }\n    }\n}\n}\n", "/*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin
Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be
found in the license/LICENSE.txt file.\n */\n\npackage kotlin.collections\n\nimport
kotlin.native.concurrent.SharedImmutable\n\n@SharedImmutable\nprivate val emptyElementData =
emptyArray<Any?>()\nprivate const val maxArraySize = Int.MAX_VALUE - 8\nprivate const val
defaultMinCapacity = 10\n\n/**\n * Resizable-array implementation of the deque data structure.\n * \n * The name
deque is short for "double ended queue" and is usually pronounced "deck".\n * \n * The collection provide
methods for convenient access to the both ends.\n * It also implements [MutableList] interface and supports efficient
get/set operations by index.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic class ArrayDeque<E> :
AbstractMutableList<E> {\n    private var head: Int = 0\n    private var elementData: Array<Any?>\n\n    override
var size: Int = 0\n    private set\n\n    /**\n     * Constructs an empty deque with specified [initialCapacity], or
throws [IllegalArgumentException] if [initialCapacity] is negative.\n     */\n    public constructor(initialCapacity:
Int) {\n        elementData = when {\n            initialCapacity == 0 -> emptyElementData\n            initialCapacity > 0 -
> arrayOfNulls(initialCapacity)\n            else -> throw IllegalArgumentException("Illegal Capacity:
$initialCapacity")\n        }\n    }\n\n    /**\n     * Constructs an empty deque.\n     */\n    public constructor() {\n
elementData = emptyElementData\n    }\n\n    /**\n     * Constructs a deque that contains the same elements as the
specified [elements] collection in the same order.\n     */\n    public constructor(elements: Collection<E>) {\n
elementData = elements.toArray()\n        size = elementData.size\n        if (elementData.isEmpty())\n            elementData = emptyElementData\n    }\n\n    /**\n     * Ensures that the capacity of this deque is at least equal to
the specified [minCapacity].\n     * \n     * If the current capacity is less than the [minCapacity], a new backing
storage is allocated with greater capacity.\n     * \n     * Otherwise, this method takes no action and simply returns.\n     */\n    private fun ensureCapacity(minCapacity: Int) {\n        if (minCapacity < 0) throw IllegalStateException("Deque is
too big.") // overflow\n        if (minCapacity <= elementData.size) return\n        if (elementData ===
emptyElementData) {\n            elementData = arrayOfNulls(minCapacity.coerceAtLeast(defaultMinCapacity))\n
            return\n        }\n        val newCapacity = newCapacity(elementData.size, minCapacity)\n
copyElements(newCapacity)\n    }\n\n    // made internal for testing\n    internal fun newCapacity(oldCapacity: Int,
minCapacity: Int): Int {\n        // overflow-conscious\n        var newCapacity = oldCapacity + (oldCapacity shr 1)\n
        if (newCapacity - minCapacity < 0)\n            newCapacity = minCapacity\n        if (newCapacity - maxArraySize >
0)\n            newCapacity = if (minCapacity > maxArraySize) Int.MAX_VALUE else maxArraySize\n        return
newCapacity\n    }\n\n    /**\n     * Creates a new array with the specified [newCapacity] size and copies elements in
the [elementData] array to it.\n     */\n    private fun copyElements(newCapacity: Int) {\n        val newElements =
arrayOfNulls<Any?>(newCapacity)\n        elementData.copyInto(newElements, 0, head, elementData.size)\n
        elementData.copyInto(newElements, elementData.size - head, 0, head)\n        head = 0\n        elementData =
newElements\n    }\n\n    @kotlin.internal.InlineOnly\n    private inline fun internalGet(internalIndex: Int): E {\n

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@Suppress("UNCHECKED_CAST")\n    return elementData[internalIndex] as E\n    }\n\n    private fun
positiveMod(index: Int): Int = if (index >= elementData.size) index - elementData.size else index\n\n    private fun
negativeMod(index: Int): Int = if (index < 0) index + elementData.size else index\n\n
@kotlin.internal.InlineOnly\n    private inline fun internalIndex(index: Int): Int = positiveMod(head + index)\n\n
private fun incremented(index: Int): Int = if (index == elementData.lastIndex) 0 else index + 1\n\n    private fun
decremented(index: Int): Int = if (index == 0) elementData.lastIndex else index - 1\n\n    override fun isEmpty():
Boolean = size == 0\n\n    /**\n     * Returns the first element, or throws [NoSuchElementException] if this deque is
empty.\n     */\n    public fun first(): E = if (isEmpty()) throw NoSuchElementException("ArrayDeque is empty.")
else internalGet(head)\n\n    /**\n     * Returns the first element, or `null` if this deque is empty.\n     */\n    public
fun firstOrNull(): E? = if (isEmpty()) null else internalGet(head)\n\n    /**\n     * Returns the last element, or throws
[NoSuchElementException] if this deque is empty.\n     */\n    public fun last(): E = if (isEmpty()) throw
NoSuchElementException("ArrayDeque is empty.") else internalGet(internalIndex(lastIndex))\n\n    /**\n     *
Returns the last element, or `null` if this deque is empty.\n     */\n    public fun lastOrNull(): E? = if (isEmpty()) null
else internalGet(internalIndex(lastIndex))\n\n    /**\n     * Prepends the specified [element] to this deque.\n     */\n
public fun addFirst(element: E) {\n        ensureCapacity(size + 1)\n\n        head = decremented(head)\n
elementData[head] = element\n        size += 1\n    }\n\n    /**\n     * Appends the specified [element] to this deque.\n
*/\n    public fun addLast(element: E) {\n        ensureCapacity(size + 1)\n\n        elementData[internalIndex(size)] =
element\n        size += 1\n    }\n\n    /**\n     * Removes the first element from this deque and returns that removed
element, or throws [NoSuchElementException] if this deque is empty.\n     */\n    public fun removeFirst(): E {\n
if (isEmpty()) throw NoSuchElementException("ArrayDeque is empty.")\n\n        val element =
internalGet(head)\n        elementData[head] = null\n        head = incremented(head)\n        size -= 1\n        return
element\n    }\n\n    /**\n     * Removes the first element from this deque and returns that removed element, or
returns `null` if this deque is empty.\n     */\n    public fun removeFirstOrNull(): E? = if (isEmpty()) null else
removeFirst()\n\n    /**\n     * Removes the last element from this deque and returns that removed element, or
throws [NoSuchElementException] if this deque is empty.\n     */\n    public fun removeLast(): E {\n        if
(isEmpty()) throw NoSuchElementException("ArrayDeque is empty.")\n\n        val internalLastIndex =
internalIndex(lastIndex)\n        val element = internalGet(internalLastIndex)\n        elementData[internalLastIndex] =
null\n        size -= 1\n        return element\n    }\n\n    /**\n     * Removes the last element from this deque and returns
that removed element, or returns `null` if this deque is empty.\n     */\n    public fun removeLastOrNull(): E? = if
(isEmpty()) null else removeLast()\n\n    // MutableList, MutableCollection\n    public override fun add(element: E):
Boolean {\n        addLast(element)\n        return true\n    }\n\n    public override fun add(index: Int, element: E) {\n
        AbstractList.checkPositionIndex(index, size)\n\n        if (index == size) {\n            addLast(element)\n
return\n        } else if (index == 0) {\n            addFirst(element)\n            return\n        }\n\n        ensureCapacity(size
+ 1)\n\n        // Elements in circular array lay in 2 ways:\n        // 1. `head` is less than `tail`:    [#, #, e1, e2, e3,
#]\n        // 2. `head` is greater than `tail`:    [e3, #, #, #, e1, e2]\n        // where head is the index of the first element
in the circular array,\n        // and tail is the index following the last element.\n        //\n        // At this point the
insertion index is not equal to head or tail.\n        // Also the circular array can store at least one more element.\n
//\n        // Depending on where the given element must be inserted the preceding or the succeeding\n        // elements
will be shifted to make room for the element to be inserted.\n        //\n        // In case the preceding elements are
shifted:\n        // * if the insertion index is greater than the head (regardless of circular array form)\n        // ->
shift the preceding elements\n        // * otherwise, the circular array has (2) form and the insertion index is less than
tail\n        // -> shift all elements in the back of the array\n        // -> shift preceding elements in the front of the
array\n        // In case the succeeding elements are shifted:\n        // * if the insertion index is less than the tail
(regardless of circular array form)\n        // -> shift the succeeding elements\n        // * otherwise, the circular
array has (2) form and the insertion index is greater than head\n        // -> shift all elements in the front of the
array\n        // -> shift succeeding elements in the back of the array\n\n        val internalIndex =
internalIndex(index)\n\n        if (index < (size + 1) shr 1) {\n            // closer to the first element -> shift preceding
elements\n            val decrementedInternalIndex = decremented(internalIndex)\n            val decrementedHead =

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decremented(head)\n\n        if (decrementedInternalIndex >= head) {\n            elementData[decrementedHead]\n        = elementData[head] // head can be zero\n            elementData.copyInto(elementData, head, head + 1,\n        decrementedInternalIndex + 1)\n        } else { // head > tail\n            elementData.copyInto(elementData, head -\n        1, head, elementData.size) // head can't be zero\n            elementData[elementData.size - 1] = elementData[0]\n            elementData.copyInto(elementData, 0, 1, decrementedInternalIndex + 1)\n        }\n\n        elementData[decrementedInternalIndex] = element\n            head = decrementedHead\n        } else {\n            //\n        closer to the last element -> shift succeeding elements\n            val tail = internalIndex(size)\n            if\n        (internalIndex < tail) {\n            elementData.copyInto(elementData, internalIndex + 1, internalIndex, tail)\n        }\n        } else { // head > tail\n            elementData.copyInto(elementData, 1, 0, tail)\n            elementData[0] =\n        elementData[elementData.size - 1]\n            elementData.copyInto(elementData, internalIndex + 1, internalIndex,\n        elementData.size - 1)\n        }\n        elementData[internalIndex] = element\n        }\n        size += 1\n    }\n\n    private fun copyCollectionElements(internalIndex: Int, elements: Collection<E>) {\n        val iterator =\n        elements.iterator()\n        for (index in internalIndex until elementData.size) {\n            if (!iterator.hasNext())\n        break\n            elementData[index] = iterator.next()\n        }\n        for (index in 0 until head) {\n            if\n        (!iterator.hasNext()) break\n            elementData[index] = iterator.next()\n        }\n        size += elements.size\n    }\n\n    public override fun addAll(elements: Collection<E>): Boolean {\n        if (elements.isEmpty()) return false\n        ensureCapacity(this.size + elements.size)\n        copyCollectionElements(internalIndex(size), elements)\n        return true\n    }\n\n    public override fun addAll(index: Int, elements: Collection<E>): Boolean {\n        AbstractList.checkPositionIndex(index, size)\n        if (elements.isEmpty()) {\n            return false\n        } else if\n        (index == size) {\n            return addAll(elements)\n        }\n        ensureCapacity(this.size + elements.size)\n        val tail = internalIndex(size)\n        val internalIndex = internalIndex(index)\n        val elementsSize =\n        elements.size\n        if (index < (size + 1) shr 1) {\n            // closer to the first element -> shift preceding\n        elements\n            var shiftedHead = head - elementsSize\n            if (internalIndex >= head) {\n                if\n            (shiftedHead >= 0) {\n                elementData.copyInto(elementData, shiftedHead, head, internalIndex)\n            }\n        } else { // head < tail, insertion leads to head >= tail\n            shiftedHead += elementData.size\n            val\n        elementsToShift = internalIndex - head\n            val shiftToBack = elementData.size - shiftedHead\n            if (shiftToBack >= elementsToShift) {\n                elementData.copyInto(elementData, shiftedHead, head,\n            internalIndex)\n            } else {\n                elementData.copyInto(elementData, shiftedHead, head, head +\n            shiftToBack)\n                elementData.copyInto(elementData, 0, head + shiftToBack, internalIndex)\n            }\n        }\n        } else { // head > tail, internalIndex < tail\n            elementData.copyInto(elementData,\n        shiftedHead, head, elementData.size)\n            if (elementsSize >= internalIndex) {\n                elementData.copyInto(elementData, elementData.size - elementsSize, 0, internalIndex)\n            } else {\n                elementData.copyInto(elementData, elementData.size - elementsSize, 0, elementsSize)\n                elementData.copyInto(elementData, 0, elementsSize, internalIndex)\n            }\n            head =\n        shiftedHead\n            copyCollectionElements(negativeMod(internalIndex - elementsSize), elements)\n        } else\n        {\n            // closer to the last element -> shift succeeding elements\n            val shiftedInternalIndex =\n        internalIndex + elementsSize\n            if (internalIndex < tail) {\n                if (tail + elementsSize <=\n        elementData.size) {\n                elementData.copyInto(elementData, shiftedInternalIndex, internalIndex, tail)\n            }\n        } else { // head < tail, insertion leads to head >= tail\n            if (shiftedInternalIndex >= elementData.size)\n        {\n                elementData.copyInto(elementData, shiftedInternalIndex - elementData.size, internalIndex, tail)\n            }\n        } else {\n            val shiftToFront = tail + elementsSize - elementData.size\n            elementData.copyInto(elementData, 0, tail - shiftToFront, tail)\n            elementData.copyInto(elementData,\n        shiftedInternalIndex, internalIndex, tail - shiftToFront)\n        }\n        }\n        } else { // head > tail,\n        internalIndex > head\n            elementData.copyInto(elementData, elementsSize, 0, tail)\n            if\n        (shiftedInternalIndex >= elementData.size) {\n                elementData.copyInto(elementData, shiftedInternalIndex\n        - elementData.size, internalIndex, elementData.size)\n            } else {\n                elementData.copyInto(elementData, 0, elementData.size - elementsSize, elementData.size)\n                elementData.copyInto(elementData, shiftedInternalIndex, internalIndex, elementData.size - elementsSize)\n            }\n        }\n    }\n
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}\n    }\n    copyCollectionElements(internalIndex, elements)\n    }\n    return true\n }\n\n public
override fun get(index: Int): E {\n    AbstractList.checkElementIndex(index, size)\n    return
internalGet(internalIndex(index))\n }\n\n public override fun set(index: Int, element: E): E {\n
AbstractList.checkElementIndex(index, size)\n    val internalIndex = internalIndex(index)\n    val oldElement
= internalGet(internalIndex)\n    elementData[internalIndex] = element\n    return oldElement\n }\n\n
public override fun contains(element: E): Boolean = indexOf(element) != -1\n\n public override fun
indexOf(element: E): Int {\n    val tail = internalIndex(size)\n    if (head < tail) {\n        for (index in head
until tail) {\n            if (element == elementData[index]) return index - head\n        }\n    } else if (head >=
tail) {\n        for (index in head until elementData.size) {\n            if (element == elementData[index]) return
index - head\n        }\n        for (index in 0 until tail) {\n            if (element == elementData[index]) return
index + elementData.size - head\n        }\n    }\n    return -1\n }\n\n public override fun
lastIndexOf(element: E): Int {\n    val tail = internalIndex(size)\n    if (head < tail) {\n        for (index in tail
- 1 downTo head) {\n            if (element == elementData[index]) return index - head\n        }\n    } else if
(head > tail) {\n        for (index in tail - 1 downTo 0) {\n            if (element == elementData[index]) return
index + elementData.size - head\n        }\n        for (index in elementData.lastIndex downTo head) {\n
if (element == elementData[index]) return index - head\n        }\n    }\n    return -1\n }\n\n public
override fun remove(element: E): Boolean {\n    val index = indexOf(element)\n    if (index == -1) return
false\n    removeAt(index)\n    return true\n }\n\n public override fun removeAt(index: Int): E {\n
AbstractList.checkElementIndex(index, size)\n    if (index == lastIndex) {\n        return removeLast()\n    }
else if (index == 0) {\n        return removeFirst()\n    }\n    val internalIndex = internalIndex(index)\n
val element = internalGet(internalIndex)\n    if (index < size shr 1) {\n        // closer to the first element ->
shift preceding elements\n        if (internalIndex >= head) {\n            elementData.copyInto(elementData, head
+ 1, head, internalIndex)\n        } else { // head > tail, internalIndex < head\n
elementData.copyInto(elementData, 1, 0, internalIndex)\n            elementData[0] = elementData[elementData.size
- 1]\n            elementData.copyInto(elementData, head + 1, head, elementData.size - 1)\n        }\n    }\n
elementData[head] = null\n    head = incremented(head)\n    } else {\n        // closer to the last element ->
shift succeeding elements\n        val internalLastIndex = internalIndex(lastIndex)\n        if (internalIndex <=
internalLastIndex) {\n            elementData.copyInto(elementData, internalIndex, internalIndex + 1,
internalLastIndex + 1)\n        } else { // head > tail, internalIndex > head\n
elementData.copyInto(elementData, internalIndex, internalIndex + 1, elementData.size)\n
elementData[elementData.size - 1] = elementData[0]\n            elementData.copyInto(elementData, 0, 1,
internalLastIndex + 1)\n        }\n    }\n    elementData[internalLastIndex] = null\n    }\n    size -= 1\n\n
return element\n }\n\n public override fun removeAll(elements: Collection<E>): Boolean = filterInPlace {
!elements.contains(it) }\n\n public override fun retainAll(elements: Collection<E>): Boolean = filterInPlace {
elements.contains(it) }\n\n private inline fun filterInPlace(predicate: (E) -> Boolean): Boolean {\n    if
(this.isEmpty() || elementData.isEmpty())\n        return false\n\n    val tail = internalIndex(size)\n    var
newTail = head\n    var modified = false\n\n    if (head < tail) {\n        for (index in head until tail) {\n
val element = elementData[index]\n            @Suppress("UNCHECKED_CAST")\n            if
(predicate(element as E))\n                elementData[newTail++] = element\n            else\n                modified =
true\n        }\n        elementData.fill(null, newTail, tail)\n    } else {\n        for (index in head until
elementData.size) {\n            val element = elementData[index]\n            elementData[index] = null\n
@Suppress("UNCHECKED_CAST")\n            if (predicate(element as E))\n                elementData[newTail++] = element\n
            else\n                modified = true\n        }\n        newTail =
positiveMod(newTail)\n        for (index in 0 until tail) {\n            val element = elementData[index]\n
elementData[index] = null\n            @Suppress("UNCHECKED_CAST")\n            if (predicate(element as
E)) {\n                elementData[newTail] = element\n                newTail = incremented(newTail)\n            }
else {\n                modified = true\n            }\n        }\n        if (modified)\n            size =
negativeMod(newTail - head)\n    }\n    return modified\n }\n\n public override fun clear() {\n    val tail =

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internalIndex(size)\n    if (head < tail) {\n        elementData.fill(null, head, tail)\n    } else if (isEmpty())\n    {\n        elementData.fill(null, head, elementData.size)\n        elementData.fill(null, 0, tail)\n    }\n    head =\n    0\n    size = 0\n    }\n\n    // For testing only\n    internal fun internalStructure(structure: (head: Int, elements:\n    Array<Any?>) -> Unit) {\n        val tail = internalIndex(size)\n\n        if (isEmpty()) {\n            structure(head,\n            emptyArray())\n            return\n        }\n\n        val elements = arrayOfNulls<Any?>(size)\n        if (head < tail) {\n            elementData.copyInto(elements, startIndex = head, endIndex = tail)\n            structure(head, elements)\n        }\n        else {\n            elementData.copyInto(elements, startIndex = head)\n            elementData.copyInto(elements,\n            elementData.size - head, startIndex = 0, endIndex = tail)\n            structure(head - elementData.size, elements)\n        }\n    }\n\n    }"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of\n this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n *\n */\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("ArraysKt")\n\npackage\nkotlin.collections\n\nimport kotlin.contracts.*\n\n/**\n * Returns a single list of all elements from all arrays in the\n given array.\n * @sample samples.collections.Arrays.Transformations.flattenArray\n */\npublic fun <T> Array<out\n Array<out T>>.flatten(): List<T> {\n    val result = ArrayList<T>(sumBy { it.size })\n    for (element in this) {\n        result.addAll(element)\n    }\n    return result\n}\n\n/**\n * Returns a pair of lists, where\n * *first* list is built from\n the first values of each pair from this array,\n * *second* list is built from the second values of each pair from this\n array.\n * @sample samples.collections.Arrays.Transformations.unzipArray\n */\npublic fun <T, R> Array<out\n Pair<T, R>>.unzip(): Pair<List<T>, List<R>> {\n    val listT = ArrayList<T>(size)\n    val listR =\n    ArrayList<R>(size)\n    for (pair in this) {\n        listT.add(pair.first)\n        listR.add(pair.second)\n    }\n    return\n    listT to listR\n}\n\n/**\n * Returns `true` if this nullable array is either null or empty.\n * @sample\n samples.collections.Arrays.Usage.arrayIsNullOrEmpty\n */\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun Array<*>.isNullOrEmpty(): Boolean\n{\n    contract {\n        returns(false) implies (this@isNullOrEmpty != null)\n    }\n    return this == null ||\n    this.isEmpty()\n}\n\n/**\n * Returns this array if it's not empty\n * or the result of calling [defaultValue] function if\n the array is empty.\n * @sample samples.collections.Arrays.Usage.arrayIfEmpty\n */\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\n@Suppress("UPPER_BOUND_CANNOT_BE_ARRAY")\npublic inline fun <C, R> C.ifEmpty(defaultValue: () -> R): R where C : Array<*>, C : R =\n    if (isEmpty())\n    defaultValue() else\n    this\n\n@UseExperimental(ExperimentalUnsignedTypes::class)\n@SinceKotlin("1.3")\n@PublishedApi\n@kotlin.jvm.JvmName("contentDeepEquals")\n@kotlin.js.JsName("contentDeepEqualsImpl")\ninternal fun <T>\n Array<out T>.contentDeepEqualsImpl(other: Array<out T>): Boolean {\n    if (this === other) return true\n    if\n (this.size != other.size) return false\n\n    for (i in indices) {\n        val v1 = this[i]\n        val v2 = other[i]\n\n        if\n (v1 === v2) {\n            continue\n        } else if (v1 == null || v2 == null) {\n            return false\n        }\n\n        when {\n            v1 is Array<*> && v2 is Array<*> -> if (!v1.contentDeepEquals(v2)) return false\n            v1\n is ByteArray && v2 is ByteArray -> if (!v1.contentEquals(v2)) return false\n            v1 is ShortArray && v2 is\n ShortArray -> if (!v1.contentEquals(v2)) return false\n            v1 is IntArray && v2 is IntArray -> if\n (!v1.contentEquals(v2)) return false\n            v1 is LongArray && v2 is LongArray -> if (!v1.contentEquals(v2))\n return false\n            v1 is FloatArray && v2 is FloatArray -> if (!v1.contentEquals(v2)) return false\n            v1 is\n DoubleArray && v2 is DoubleArray -> if (!v1.contentEquals(v2)) return false\n            v1 is CharArray && v2\n is CharArray -> if (!v1.contentEquals(v2)) return false\n            v1 is BooleanArray && v2 is BooleanArray -> if\n (!v1.contentEquals(v2)) return false\n            v1 is UByteArray && v2 is UByteArray -> if\n (!v1.contentEquals(v2)) return false\n            v1 is UShortArray && v2 is UShortArray -> if\n (!v1.contentEquals(v2)) return false\n            v1 is UIntArray && v2 is UIntArray -> if (!v1.contentEquals(v2))\n return false\n            v1 is ULongArray && v2 is ULongArray -> if (!v1.contentEquals(v2)) return false\n            v1\n is ByteArray && v2 is ByteArray -> if (!v1.contentEquals(v2)) return false\n            v1 is ShortArray && v2 is ShortArray -> if\n (!v1.contentEquals(v2)) return false\n            v1 is IntArray && v2 is IntArray -> if (!v1.contentEquals(v2))\n return false\n            v1 is LongArray && v2 is LongArray -> if (!v1.contentEquals(v2)) return false\n            v1\n is FloatArray && v2 is FloatArray -> if (!v1.contentEquals(v2)) return false\n            v1 is DoubleArray && v2 is DoubleArray -> if\n (!v1.contentEquals(v2)) return false\n            v1 is CharArray && v2 is CharArray -> if (!v1.contentEquals(v2))\n return false\n            v1 is BooleanArray && v2 is BooleanArray -> if (!v1.contentEquals(v2)) return false\n            v1\n is UByteArray && v2 is UByteArray -> if (!v1.contentEquals(v2)) return false\n            v1 is UShortArray && v2 is UShortArray -> if\n (!v1.contentEquals(v2)) return false\n            v1 is UIntArray && v2 is UIntArray -> if (!v1.contentEquals(v2))\n return false\n            v1 is ULongArray && v2 is ULongArray -> if (!v1.contentEquals(v2)) return false\n        }\n    }\n\n    return\n    true\n}\n\n@SinceKotlin("1.3")\n@PublishedApi\n@kotlin.jvm.JvmName("contentDeepToString")\n@kotlin.js.JsName("contentDeepToStringImpl")\ninternal fun <T> Array<out T>.contentDeepToStringImpl(): String {\n    val length = size.coerceAtMost((Int.MAX_VALUE - 2) / 5) * 5 + 2 // in order not to overflow Int.MAX_VALUE\n}

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return buildString(length) {\n    contentDeepToStringInternal(this, mutableListOf())\n
}\n}\n\n@UseExperimental(ExperimentalUnsignedTypes::class)\nprivate fun <T> Array<out
T>.contentDeepToStringInternal(result: StringBuilder, processed: MutableList<Array<*>>) {\n    if (this in
processed) {\n        result.append("[...]")\n        return\n    }\n    processed.add(this)\n    result.append('[')\n\n    for (i
in indices) {\n        if (i != 0) {\n            result.append(", ")\n        }\n        val element = this[i]\n        when
(element) {\n            null -> result.append("null")\n            is Array<*> ->
element.contentDeepToStringInternal(result, processed)\n            is ByteArray ->
result.append(element.contentToString())\n            is ShortArray -> result.append(element.contentToString())\n
            is IntArray -> result.append(element.contentToString())\n            is LongArray ->
result.append(element.contentToString())\n            is FloatArray -> result.append(element.contentToString())\n
            is DoubleArray -> result.append(element.contentToString())\n            is CharArray ->
result.append(element.contentToString())\n            is BooleanArray -> result.append(element.contentToString())\n\n
            is UByteArray -> result.append(element.contentToString())\n            is UShortArray ->
result.append(element.contentToString())\n            is UIntArray -> result.append(element.contentToString())\n
            is ULongArray -> result.append(element.contentToString())\n\n            else ->
result.append(element.toString())\n        }\n    }\n\n    result.append(''])\n
processed.removeAt(processed.lastIndex)\n}"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming
Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\npackage kotlin.collections\n\n/**\n * Data class representing a value from a
collection or sequence, along with its index in that collection or sequence.\n */\n * @property value the underlying
value.\n * @property index the index of the value in the collection or sequence.\n */\n\npublic data class
IndexedValue<out T>(public val index: Int, public val value: T)\n}"/*\n * Copyright 2010-2018 JetBrains s.r.o. and
Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that
can be found in the license/LICENSE.txt file.\n */\n\n@file:kotlin.jvm.JvmName("MapAccessorsKt")\n\npackage
kotlin.collections\n\nimport kotlin.reflect.KProperty\nimport kotlin.internal.Exact\n\n/**\n * Returns the value of
the property for the given object from this read-only map.\n * @param thisRef the object for which the value is
requested (not used).\n * @param property the metadata for the property, used to get the name of property and
lookup the value corresponding to this name in the map.\n * @return the property value.\n */\n * @throws
NoSuchElementException when the map doesn't contain value for the property name and doesn't provide an implicit
default (see [withDefault]).\n */\n\n@kotlin.internal.InlineOnly\npublic inline operator fun <V, V1 : V> Map<in
String, @Exact V>.getValue(thisRef: Any?, property: KProperty<*>): V1 =\n
@Suppress("UNCHECKED_CAST") (getOrImplicitDefault(property.name) as V1)\n\n/**\n * Returns the value
of the property for the given object from this mutable map.\n * @param thisRef the object for which the value is
requested (not used).\n * @param property the metadata for the property, used to get the name of property and
lookup the value corresponding to this name in the map.\n * @return the property value.\n */\n * @throws
NoSuchElementException when the map doesn't contain value for the property name and doesn't provide an implicit
default (see [withDefault]).\n */\n\n@kotlin.jvm.JvmName("getVar")\n@kotlin.internal.InlineOnly\npublic inline
operator fun <V, V1 : V> MutableMap<in String, out @Exact V>.getValue(thisRef: Any?, property:
KProperty<*>): V1 =\n    @Suppress("UNCHECKED_CAST") (getOrImplicitDefault(property.name) as
V1)\n\n@Deprecated("Use getValue() with two type parameters instead", level =
DeprecationLevel.ERROR)\n@kotlin.jvm.JvmName("getVarContravariant")\n@kotlin.internal.LowPriorityInOver
loadResolution\n@kotlin.internal.InlineOnly\npublic inline fun <V> MutableMap<in String, in
V>.getValue(thisRef: Any?, property: KProperty<*>): V =\n    @Suppress("UNCHECKED_CAST")
(getOrImplicitDefault(property.name) as V)\n\n/**\n * Stores the value of the property for the given object in this
mutable map.\n * @param thisRef the object for which the value is requested (not used).\n * @param property the
metadata for the property, used to get the name of property and store the value associated with that name in the
map.\n * @param value the value to set.\n */\n\n@kotlin.internal.InlineOnly\npublic inline operator fun <V>
MutableMap<in String, in V>.setValue(thisRef: Any?, property: KProperty<*>, value: V) {\n

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this.put(property.name, value)\n\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming
Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n
*/\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("MapsKt")\n\npackage
kotlin.collections\n\n/**\n * Returns the value for the given key, or the implicit default value for this map.\n * By
default no implicit value is provided for maps and a [NoSuchElementException] is thrown.\n * To create a map with
implicit default value use [withDefault] method.\n * @throws NoSuchElementException when the map doesn't
contain a value for the specified key and no implicit default was provided for that map.\n
*/\n\n@kotlin.jvm.JvmName("getOrNullImplicitDefaultNullable")\n\n@PublishedApi\n\ninternal fun <K, V> Map<K,
V>.getOrNullImplicitDefault(key: K): V {\n    if (this is MapWithDefault)\n        return
this.getOrNullImplicitDefault(key)\n    return getOrNullNullable(key, { throw NoSuchElementException("Key $key
is missing in the map.") })\n}\n\n/**\n * Returns a wrapper of this read-only map, having the implicit default value
provided with the specified function [defaultValue].\n * This implicit default value is used when the original
map doesn't contain a value for the key specified\n * and a value is obtained with [Map.getValue] function, for
example when properties are delegated to the map.\n * When this map already has an implicit default value
provided with a former call to [withDefault], it is being replaced by this call.\n */\n\npublic fun <K, V> Map<K,
V>.withDefault(defaultValue: (key: K) -> V): Map<K, V> =\n    when (this) {\n        is MapWithDefault ->
this.map.withDefault(defaultValue)\n        else -> MapWithDefaultImpl(this, defaultValue)\n    }\n\n/**\n * Returns
a wrapper of this mutable map, having the implicit default value provided with the specified function
[defaultValue].\n * This implicit default value is used when the original map doesn't contain a value for the key
specified\n * and a value is obtained with [Map.getValue] function, for example when properties are delegated to the
map.\n * When this map already has an implicit default value provided with a former call to [withDefault], it is
being replaced by this call.\n */\n\n@kotlin.jvm.JvmName("withDefaultMutable")\n\npublic fun <K, V>
MutableMap<K, V>.withDefault(defaultValue: (key: K) -> V): MutableMap<K, V> =\n    when (this) {\n        is
MutableMapWithDefault -> this.map.withDefault(defaultValue)\n        else -> MutableMapWithDefaultImpl(this,
defaultValue)\n    }\n\n\nprivate interface MapWithDefault<K, out V> : Map<K, V> {\n    public val map: Map<K,
V>\n    public fun getOrNullImplicitDefault(key: K): V?\n}\n\nprivate interface MutableMapWithDefault<K, V> :
MutableMap<K, V>, MapWithDefault<K, V> {\n    public override val map: MutableMap<K, V>\n}\n\n\nprivate
class MapWithDefaultImpl<K, out V>(public override val map: Map<K, V>, private val default: (key: K) -> V) :
MapWithDefault<K, V> {\n    override fun equals(other: Any?): Boolean = map.equals(other)\n    override fun
hashCode(): Int = map.hashCode()\n    override fun toString(): String = map.toString()\n    override val size: Int
get() = map.size\n    override fun isEmpty(): Boolean = map.isEmpty()\n    override fun containsKey(key: K): Boolean =
map.containsKey(key)\n    override fun containsValue(value: @UnsafeVariance V): Boolean =
map.containsValue(value)\n    override fun get(key: K): V? = map.get(key)\n    override val keys: Set<K> get() =
map.keys\n    override val values: Collection<V> get() = map.values\n    override val entries: Set<Map.Entry<K,
V>> get() = map.entries\n\n    override fun getOrNullImplicitDefault(key: K): V = map.getOrNullNullable(key, {
default(key) })\n}\n\n\nprivate class MutableMapWithDefaultImpl<K, V>(public override val map: MutableMap<K,
V>, private val default: (key: K) -> V) : MutableMapWithDefault<K, V> {\n    override fun equals(other: Any?):
Boolean = map.equals(other)\n    override fun hashCode(): Int = map.hashCode()\n    override fun toString(): String
= map.toString()\n    override val size: Int get() = map.size\n    override fun isEmpty(): Boolean = map.isEmpty()\n
    override fun containsKey(key: K): Boolean = map.containsKey(key)\n    override fun containsValue(value:
@UnsafeVariance V): Boolean = map.containsValue(value)\n    override fun get(key: K): V? = map.get(key)\n
    override val keys: MutableSet<K> get() = map.keys\n    override val values: MutableCollection<V> get() =
map.values\n    override val entries: MutableSet<MutableMap.MutableEntry<K, V>> get() = map.entries\n\n
    override fun put(key: K, value: V): V? = map.put(key, value)\n    override fun remove(key: K): V? =
map.remove(key)\n    override fun putAll(from: Map<out K, V>) = map.putAll(from)\n    override fun clear() =
map.clear()\n\n    override fun getOrNullImplicitDefault(key: K): V = map.getOrNullNullable(key, { default(key)
})\n}\n\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of

```





Removes all elements from this [MutableCollection] that are also contained in the given [elements] sequence.

```

public fun <T> MutableCollection<in T>.removeAll(elements: Sequence<T>): Boolean {
    val set = elements.toHashSet()
    return set.isNotEmpty() && removeAll(set)
}

```

Removes all elements from this [MutableCollection] that are also contained in the given [elements] array.

```

public fun <T> MutableCollection<in T>.removeAll(elements: Array<out T>): Boolean {
    return elements.isNotEmpty() && removeAll(elements.toHashSet())
}

```

Retains only elements of this [MutableCollection] that are contained in the given [elements] collection.

```

public fun <T> MutableCollection<in T>.retainAll(elements: Iterable<T>): Boolean {
    return retainAll(elements.convertToSetForSetOperationWith(this))
}

```

Retains only elements of this [MutableCollection] that are contained in the given [elements] array.

```

public fun <T> MutableCollection<in T>.retainAll(elements: Array<out T>): Boolean {
    if (elements.isNotEmpty())
        return retainAll(elements.toHashSet())
    else
        return retainNothing()
}

```

Retains only elements of this [MutableCollection] that are contained in the given [elements] sequence.

```

public fun <T> MutableCollection<in T>.retainAll(elements: Sequence<T>): Boolean {
    val set = elements.toHashSet()
    if (set.isNotEmpty())
        return retainAll(set)
    else
        return retainNothing()
}

```

private fun MutableCollection<\*>.retainNothing(): Boolean {
 val result = isEmpty()
 clear()
 return result
}

Removes all elements from this [MutableIterable] that match the given [predicate].

```

@return `true` if any element was removed from this collection, or `false` when no elements were removed and collection was not modified.
public fun <T> MutableIterable<T>.removeAll(predicate: (T) -> Boolean): Boolean =
    filterInPlace(predicate, true)

```

Retains only elements of this [MutableIterable] that match the given [predicate].

```

@return `true` if any element was removed from this collection, or `false` when all elements were retained and collection was not modified.
public fun <T> MutableIterable<T>.retainAll(predicate: (T) -> Boolean): Boolean =
    filterInPlace(predicate, false)

```

private fun <T> MutableIterable<T>.filterInPlace(predicate: (T) -> Boolean, predicateResultToRemove: Boolean): Boolean {
 var result = false
 with(iterator()) {
 while (hasNext())
 if (predicate(next()) == predicateResultToRemove)
 remove()
 result = true
 }
 return result
}

Returns a new list with the elements of this list randomly shuffled

```

using the specified [random] instance as the source of randomness.
@SinceKotlin("1.3")
public fun <T> Iterable<T>.shuffled(random: Random): List<T> =
    toMutableList().apply { shuffle(random) }

```

Removes the element at the specified [index] from this list.

In Kotlin one should use the [MutableList.removeAt] function instead.

```

@Deprecated("Use removeAt(index) instead.", ReplaceWith("removeAt(index)"), level = DeprecationLevel.ERROR)
@kotlin.internal.InlineOnly
public inline fun <T> MutableList<T>.remove(index: Int): T =
    removeAt(index)

```

Removes the first element from this mutable list and returns that removed element, or throws [NoSuchElementException] if this list is empty.

```

@SinceKotlin("1.3")
@ExperimentalStdlibApi
public fun <T> MutableList<T>.removeFirst(): T =
    if (isEmpty()) throw NoSuchElementException("List is empty.")
    else removeAt(0)

```

Removes the first element from this mutable list and returns that removed element, or returns `null` if this list is empty.

```

@SinceKotlin("1.3")
@ExperimentalStdlibApi
public fun <T> MutableList<T>.removeFirstOrNull(): T? =
    if (isEmpty()) null
    else removeAt(0)

```

Removes the last element from this mutable list and returns that removed element, or throws [NoSuchElementException] if this list is empty.

```

@SinceKotlin("1.3")
@ExperimentalStdlibApi
public fun <T> MutableList<T>.removeLast(): T =
    if (isEmpty()) throw NoSuchElementException("List is empty.")
    else removeAt(lastIndex)

```

Removes the last element from this mutable list and returns that removed element, or returns `null` if this list is empty.

```

@SinceKotlin("1.3")
@ExperimentalStdlibApi
public fun <T> MutableList<T>.removeLastOrNull(): T? =
    if (isEmpty()) null
    else removeAt(lastIndex)

```

Removes all elements from this [MutableList] that match the given [predicate].

```

@return `true` if any element was removed from this collection, or `false` when no elements were removed and collection was not modified.
public fun <T> MutableList<T>.removeAll(predicate: (T) -> Boolean): Boolean =
    filterInPlace(predicate, true)

```

Retains only elements of this [MutableList] that match the given [predicate].

```

@return `true` if any element was

```

```

removed from this collection, or `false` when all elements were retained and collection was not modified.\n
*\npublic fun <T> MutableList<T>.retainAll(predicate: (T) -> Boolean): Boolean = filterInPlace(predicate,
false)\n\nprivate fun <T> MutableList<T>.filterInPlace(predicate: (T) -> Boolean, predicateResultToRemove:
Boolean): Boolean {\n    if (this !is RandomAccess)\n        return (this as
MutableIterable<T>).filterInPlace(predicate, predicateResultToRemove)\n\n    var writeIndex: Int = 0\n    for
(readIndex in 0..lastIndex) {\n        val element = this[readIndex]\n        if (predicate(element) ==
predicateResultToRemove)\n            continue\n\n        if (writeIndex != readIndex)\n            this[writeIndex] =
element\n\n        writeIndex++\n    }\n    if (writeIndex < size) {\n        for (removeIndex in lastIndex downTo
writeIndex)\n            removeAt(removeIndex)\n\n        return true\n    } else {\n        return false\n    }\n}\n\n/**\n *
Randomly shuffles elements in this mutable list using the specified [random] instance as the source of
randomness.\n * See: https://en.wikipedia.org/wiki/Fisher%20%80%93Yates\_shuffle#The\_modern\_algorithm\n
*\n * @SinceKotlin("1.3")\npublic fun <T> MutableList<T>.shuffle(random: Random): Unit {\n    for (i in lastIndex
downTo 1) {\n        val j = random.nextInt(i + 1)\n        val copy = this[i]\n        this[i] = this[j]\n        this[j] = copy\n
    }\n}\n\n"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of
this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("CollectionsKt")\n\npackage
kotlin.collections\n\nprivate open class ReversedListReadOnly<out T>(private val delegate: List<T>) :
AbstractList<T>() {\n    override val size: Int get() = delegate.size\n    override fun get(index: Int): T =
delegate[reverseElementIndex(index)]\n}\n\nprivate class ReversedList<T>(private val delegate: MutableList<T>) :
AbstractMutableList<T>() {\n    override val size: Int get() = delegate.size\n    override fun get(index: Int): T =
delegate[reverseElementIndex(index)]\n    override fun clear() = delegate.clear()\n    override fun removeAt(index:
Int): T = delegate.removeAt(reverseElementIndex(index))\n    override fun set(index: Int, element: T): T =
delegate.set(reverseElementIndex(index), element)\n    override fun add(index: Int, element: T) {\n
delegate.add(reversePositionIndex(index), element)\n    }\n}\n\nprivate fun List<*>.reverseElementIndex(index:
Int) =\n    if (index in 0..lastIndex) lastIndex - index else throw IndexOutOfBoundsException("Element index
$index must be in range [0..lastIndex]".)\n\nprivate fun List<*>.reversePositionIndex(index: Int) =\n    if (index
in 0..size) size - index else throw IndexOutOfBoundsException("Position index $index must be in range
[0..size]".)\n\n"/*\n * Returns a reversed read-only view of the original List.\n * All changes made in the
original list will be reflected in the reversed one.\n * @sample samples.collections.ReversedViews.asReversedList\n
*\npublic fun <T> List<T>.asReversed(): List<T> = ReversedListReadOnly(this)\n\n"/*\n * Returns a reversed
mutable view of the original mutable List.\n * All changes made in the original list will be reflected in the reversed
one and vice versa.\n * @sample samples.collections.ReversedViews.asReversedMutableList\n
*\n\n@kotlin.jvm.JvmName("asReversedMutable")\npublic fun <T> MutableList<T>.asReversed():
MutableList<T> = ReversedList(this)\n\n"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming
Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n
*\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("SequencesKt")\n\n@file:UseExperimental(
ExperimentalTypeInference::class)\n\npackage kotlin.sequences\n\nimport kotlin.coroutines.*\nimport
kotlin.coroutines.intrinsics.*\nimport kotlin.experimental.ExperimentalTypeInference\n\n"/*\n * Builds a
[Sequence] lazily yielding values one by one.\n * @see kotlin.sequences.generateSequence\n * @sample
samples.collections.Sequences.Building.buildSequenceYieldAll\n * @sample
samples.collections.Sequences.Building.buildFibonacciSequence\n
*\n\n@SinceKotlin("1.3")\npublic fun <T>
sequence(@BuilderInference block: suspend SequenceScope<T>().-> Unit): Sequence<T> = Sequence {
iterator(block) }\n\n@SinceKotlin("1.3")\n@Deprecated("Use 'sequence { }' function instead.",
ReplaceWith("sequence(builderAction)"), level =
DeprecationLevel.ERROR)\n@kotlin.internal.InlineOnly\npublic inline fun <T> buildSequence(@BuilderInference
noinline builderAction: suspend SequenceScope<T>().-> Unit): Sequence<T> = Sequence { iterator(builderAction)
}\n\n"/*\n * Builds an [Iterator] lazily yielding values one by one.\n * @sample

```

```

samples.collections.Sequences.Building.buildIterator\n * @sample samples.collections.Iterables.Building.iterable\n
*\n@SinceKotlin("1.3")\npublic fun <T> iterator(@BuilderInference block: suspend SequenceScope<T>().->
Unit): Iterator<T> {\n    val iterator = SequenceBuilderIterator<T>()\n    iterator.nextStep =
block.createCoroutineUnintercepted(receiver = iterator, completion = iterator)\n    return
iterator\n}\n\n@SinceKotlin("1.3")\n@Deprecated("Use 'iterator { }' function instead.",
ReplaceWith("iterator(builderAction)"), level = DeprecationLevel.ERROR)\n@kotlin.internal.InlineOnly\npublic
inline fun <T> buildIterator(@BuilderInference noinline builderAction: suspend SequenceScope<T>().-> Unit):
Iterator<T> = iterator(builderAction)\n\n/**\n * The scope for yielding values of a [Sequence] or an [Iterator],
provides [yield] and [yieldAll] suspension functions.\n *\n * @see sequence\n * @see iterator\n *\n * @sample
samples.collections.Sequences.Building.buildSequenceYieldAll\n * @sample
samples.collections.Sequences.Building.buildFibonacciSequence\n
*\n@RestrictsSuspension\n@SinceKotlin("1.3")\npublic abstract class SequenceScope<in T> internal
constructor() {\n    /**\n     * Yields a value to the [Iterator] being built and suspends\n     * until the next value is
requested.\n     *\n     * @sample samples.collections.Sequences.Building.buildSequenceYieldAll\n     * @sample
samples.collections.Sequences.Building.buildFibonacciSequence\n     */\n    public abstract suspend fun yield(value:
T)\n\n    /**\n     * Yields all values from the `iterator` to the [Iterator] being built\n     * and suspends until all these
values are iterated and the next one is requested.\n     *\n     * The sequence of values returned by the given iterator
can be potentially infinite.\n     *\n     * @sample samples.collections.Sequences.Building.buildSequenceYieldAll\n
*/\n    public abstract suspend fun yieldAll(iterator: Iterator<T>)\n\n    /**\n     * Yields a collections of values to
the [Iterator] being built\n     * and suspends until all these values are iterated and the next one is requested.\n     *\n
     * @sample samples.collections.Sequences.Building.buildSequenceYieldAll\n     */\n    public suspend fun
yieldAll(elements: Iterable<T>) {\n        if (elements is Collection && elements.isEmpty()) return\n        return
yieldAll(elements.iterator())\n    }\n\n    /**\n     * Yields potentially infinite sequence of values to the [Iterator]
being built\n     * and suspends until all these values are iterated and the next one is requested.\n     *\n     * The
sequence can be potentially infinite.\n     *\n     * @sample
samples.collections.Sequences.Building.buildSequenceYieldAll\n     */\n    public suspend fun yieldAll(sequence:
Sequence<T>) = yieldAll(sequence.iterator())\n}\n\n@Deprecated("Use SequenceScope class instead.",
ReplaceWith("SequenceScope<T>"), level = DeprecationLevel.ERROR)\npublic typealias SequenceBuilder<T> =
SequenceScope<T>\n\nprivate typealias State = Int\n\nprivate const val State_NotReady: State = 0\nprivate const
val State_ManyNotReady: State = 1\nprivate const val State_ManyReady: State = 2\nprivate const val State_Ready:
State = 3\nprivate const val State_Done: State = 4\nprivate const val State_Failed: State = 5\n\nprivate class
SequenceBuilderIterator<T> : SequenceScope<T>(), Iterator<T>, Continuation<Unit> {\n    private var state =
State_NotReady\n    private var nextValue: T? = null\n    private var nextIterator: Iterator<T>? = null\n    var
nextStep: Continuation<Unit>? = null\n\n    override fun hasNext(): Boolean {\n        while (true) {\n            when
(state) {\n                State_NotReady -> {}\n                State_ManyNotReady ->\n                    if
(nextIterator!!.hasNext()) {\n                        state = State_ManyReady\n                        return true\n                    }
else {\n                        nextIterator = null\n                    }\n                State_Done -> return false\n
                State_Ready, State_ManyReady -> return true\n                else -> throw exceptionalState()\n            }\n            state
= State_Failed\n            val step = nextStep!!\n            nextStep = null\n            step.resume(Unit)\n        }\n    }\n\n    override fun next(): T {\n        when (state) {\n            State_NotReady, State_ManyNotReady -> return
nextNotReady()\n            State_ManyReady -> {\n                state = State_ManyNotReady\n                return
nextIterator!!.next()\n            }\n            State_Ready -> {\n                state = State_NotReady\n                @Suppress("UNCHECKED_CAST")\n                val result = nextValue as T\n                nextValue = null\n
                return result\n            }\n            else -> throw exceptionalState()\n        }\n    }\n\n    private fun nextNotReady(): T
{\n        if (!hasNext()) throw NoSuchElementException() else return next()\n    }\n\n    private fun
exceptionalState(): Throwable = when (state) {\n        State_Done -> NoSuchElementException()\n        State_Failed
-> IllegalStateException("Iterator has failed.")\n        else -> IllegalStateException("Unexpected state of the
iterator: $state")\n    }\n\n    override suspend fun yield(value: T) {\n        nextValue = value\n        state =

```

```

State_Ready\n    return suspendCoroutineUninterceptedOrReturn { c ->\n        nextStep = c\nCOROUTINE_SUSPENDED\n    }\n    }\n    override suspend fun yieldAll(iterator: Iterator<T>) {\n        if\n        (!iterator.hasNext()) return\n        nextIterator = iterator\n        state = State_ManyReady\n        return\n        suspendCoroutineUninterceptedOrReturn { c ->\n            nextStep = c\n            COROUTINE_SUSPENDED\n        }\n    }\n    // Completion continuation implementation\n    override fun resumeWith(result: Result<Unit>) {\n        result.getOrThrow() // just rethrow exception if it is there\n        state = State_Done\n    }\n    override val context:\n    CoroutineContext\n        get() = EmptyCoroutineContext\n    }"/*\n * Copyright 2010-2018 JetBrains s.r.o. and\n    Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that\n    can be found in the license/LICENSE.txt file.\n */\npackage kotlin.collections\n\ninternal fun\n    checkWindowSizeStep(size: Int, step: Int) {\n        require(size > 0 && step > 0) {\n            if (size != step)\n                \"Both size $size and step $step must be greater than zero.\"\n            else\n                \"size $size must be greater than\n                zero.\"\n        }\n    }\n\ninternal fun <T> Sequence<T>.windowedSequence(size: Int, step: Int, partialWindows: Boolean,\n    reuseBuffer: Boolean): Sequence<List<T>> {\n    checkWindowSizeStep(size, step)\n    return Sequence {\n        windowedIterator(iterator(), size, step, partialWindows, reuseBuffer) }\n    }\n\ninternal fun <T>\n    windowedIterator(iterator: Iterator<T>, size: Int, step: Int, partialWindows: Boolean, reuseBuffer: Boolean):\n    Iterator<List<T>> {\n        if (!iterator.hasNext()) return EmptyIterator\n        return iterator<List<T>> {\n            val\n            bufferInitialCapacity = size.coerceAtMost(1024)\n            val gap = step - size\n            if (gap >= 0) {\n                var buffer\n                = ArrayList<T>(bufferInitialCapacity)\n                var skip = 0\n                for (e in iterator) {\n                    if (skip > 0) {\n                        skip -= 1; continue }\n                    buffer.add(e)\n                    if (buffer.size == size) {\n                        yield(buffer)\n                        if (reuseBuffer) buffer.clear() else buffer = ArrayList(size)\n                        skip = gap\n                    }\n                    if (buffer.isNotEmpty()) {\n                        if (partialWindows || buffer.size == size) yield(buffer)\n                    }\n                }\n            } else {\n                var buffer = RingBuffer<T>(bufferInitialCapacity)\n                for (e in iterator) {\n                    buffer.add(e)\n                    if (buffer.isFull()) {\n                        if (buffer.size < size) { buffer =\n                            buffer.expanded(maxCapacity = size); continue }\n                        yield(if (reuseBuffer) buffer else\n                            ArrayList(buffer))\n                        buffer.removeFirst(step)\n                    }\n                    if (partialWindows) {\n                        while (buffer.size > step) {\n                            yield(if (reuseBuffer) buffer else ArrayList(buffer))\n                            buffer.removeFirst(step)\n                        }\n                        if (buffer.isNotEmpty()) yield(buffer)\n                    }\n                }\n            }\n        }\n    }\n\ninternal class MovingSubList<out E>(private val list: List<E>) : AbstractList<E>(), RandomAccess {\n    private var fromIndex: Int = 0\n    private var _size: Int = 0\n    fun move(fromIndex: Int, toIndex: Int) {\n        checkRangeIndexes(fromIndex, toIndex, list.size)\n        this.fromIndex = fromIndex\n        this._size = toIndex -\n        fromIndex\n    }\n    override fun get(index: Int): E {\n        checkElementIndex(index, _size)\n        return\n        list[fromIndex + index]\n    }\n    override val size: Int get() = _size\n    }/\n\n/**\n * Provides ring buffer\n    implementation.\n * Buffer overflow is not allowed so [add] doesn't overwrite tail but raises an exception.\n */\nprivate class RingBuffer<T>(private val buffer: Array<Any?>, filledSize: Int) : AbstractList<T>(),\n    RandomAccess {\n    init {\n        require(filledSize >= 0) { \"ring buffer filled size should not be negative but it is\n        $filledSize\" }\n        require(filledSize <= buffer.size) { \"ring buffer filled size: $filledSize cannot be larger than\n        the buffer size: ${buffer.size}\" }\n    }\n    constructor(capacity: Int) : this(arrayOfNulls<Any?>(capacity), 0)\n    private val capacity = buffer.size\n    private var startIndex: Int = 0\n    override var size: Int = filledSize\n    private set\n    override fun get(index: Int): T {\n        checkElementIndex(index, size)\n        @Suppress(\"UNCHECKED_CAST\")\n        return buffer[startIndex.forward(index)] as T\n    }\n    fun isFull() =\n    size == capacity\n    override fun iterator(): Iterator<T> = object : AbstractIterator<T>() {\n        private var count\n        = size\n        private var index = startIndex\n        override fun computeNext() {\n            if (count == 0) {\n                done()\n            } else {\n                @Suppress(\"UNCHECKED_CAST\")\n                setNext(buffer[index] as\n                T)\n                index = index.forward(1)\n                count--\n            }\n        }\n    }\n    @Suppress(\"UNCHECKED_CAST\")\n    override fun <T> toArray(array: Array<T>): Array<T> {\n        val\n        result: Array<T?> =\n        if (array.size < this.size) array.copyOf(this.size) else array as Array<T?>\n        val\n        size = this.size\n        var widx = 0\n        var idx = startIndex\n        while (widx < size && idx < capacity) {\n            result[widx] = buffer[idx] as T\n            widx++\n            idx++\n        }\n        idx = 0\n        while (widx <

```

```

size) {\n        result[widx] = buffer[idx] as T\n            widx++\n            idx++\n        }\n        if (result.size >
this.size) result[this.size] = null\n\n        return result as Array<T>\n    }\n\n    override fun toArray(): Array<Any?>
{\n        return toArray(arrayOfNulls(size))\n    }\n\n    /**\n     * Creates a new ring buffer with the capacity equal to
the minimum of [maxCapacity] and 1.5 * [capacity].\n     * The returned ring buffer contains the same elements as
this ring buffer.\n     */\n    fun expanded(maxCapacity: Int): RingBuffer<T> {\n        val newCapacity = (capacity +
(capacity shr 1) + 1).coerceAtMost(maxCapacity)\n        val newBuffer = if (startIndex == 0)
buffer.copyOf(newCapacity) else toArray(arrayOfNulls(newCapacity))\n        return RingBuffer(newBuffer, size)\n    }\n\n    /**\n     * Add [element] to the buffer or fail with [IllegalStateException] if no free space available in the
buffer.\n     */\n    fun add(element: T) {\n        if (isFull()) {\n            throw IllegalStateException("ring buffer is
full")\n        }\n        buffer[startIndex.forward(size)] = element\n        size++\n    }\n\n    /**\n     * Removes [n]
first elements from the buffer or fails with [IllegalArgumentException] if not enough elements in the buffer to
remove.\n     */\n    fun removeFirst(n: Int) {\n        require(n >= 0) { "\"n shouldn't be negative but it is $n\""}\n        require(n <= size) { "\"n shouldn't be greater than the buffer size: n = $n, size = $size\""}\n        if (n > 0) {\n            val start = startIndex\n            val end = start.forward(n)\n            if (start > end) {\n                buffer.fill(null, start,
capacity)\n                buffer.fill(null, 0, end)\n            } else {\n                buffer.fill(null, start, end)\n            }\n            startIndex = end\n            size -= n\n        }\n    }\n\n    @Suppress("NOTHING_TO_INLINE")\n    private
inline fun Int.forward(n: Int): Int = (this + n) % capacity\n}\n\n    /**\n     * Copyright 2010-2019 JetBrains s.r.o. and
Kotlin Programming Language contributors.\n     * Use of this source code is governed by the Apache 2.0 license that
can be found in the license/LICENSE.txt file.\n     */\n\npackage kotlin.collections\n\n// UByteArray

```

```

=====\n@Exp
erimentalUnsignedTypes\nprivate fun partition(\n    array: UByteArray, left: Int, right: Int): Int {\n    var i = left\n    var j = right\n    val pivot = array[(left + right) / 2]\n    while (i <= j) {\n        while (array[i] < pivot)\n            i++\n        while (array[j] > pivot)\n            j--\n        if (i <= j) {\n            val tmp = array[i]\n            array[i] = array[j]\n            array[j] = tmp\n            i++\n            j--\n        }\n    }\n    return i\n}\n\n@ExperimentalUnsignedTypes\nprivate fun
quickSort(\n    array: UByteArray, left: Int, right: Int) {\n    val index = partition(array, left, right)\n    if (left < index
- 1)\n        quickSort(array, left, index - 1)\n    if (index < right)\n        quickSort(array, index, right)\n}\n\n//
UShortArray

```

```

=====\n@Exp
erimentalUnsignedTypes\nprivate fun partition(\n    array: UShortArray, left: Int, right: Int): Int {\n    var i = left\n    var j = right\n    val pivot = array[(left + right) / 2]\n    while (i <= j) {\n        while (array[i] < pivot)\n            i++\n        while (array[j] > pivot)\n            j--\n        if (i <= j) {\n            val tmp = array[i]\n            array[i] = array[j]\n            array[j] = tmp\n            i++\n            j--\n        }\n    }\n    return i\n}\n\n@ExperimentalUnsignedTypes\nprivate fun
quickSort(\n    array: UShortArray, left: Int, right: Int) {\n    val index = partition(array, left, right)\n    if (left <
index - 1)\n        quickSort(array, left, index - 1)\n    if (index < right)\n        quickSort(array, index, right)\n}\n\n//
UIntArray

```

```

=====\n@Exp
erimentalUnsignedTypes\nprivate fun partition(\n    array: UIntArray, left: Int, right: Int): Int {\n    var i = left\n    var j = right\n    val pivot = array[(left + right) / 2]\n    while (i <= j) {\n        while (array[i] < pivot)\n            i++\n        while (array[j] > pivot)\n            j--\n        if (i <= j) {\n            val tmp = array[i]\n            array[i] = array[j]\n            array[j] = tmp\n            i++\n            j--\n        }\n    }\n    return i\n}\n\n@ExperimentalUnsignedTypes\nprivate fun
quickSort(\n    array: UIntArray, left: Int, right: Int) {\n    val index = partition(array, left, right)\n    if (left < index
- 1)\n        quickSort(array, left, index - 1)\n    if (index < right)\n        quickSort(array, index, right)\n}\n\n//
ULongArray

```

```

=====\n@Exp
erimentalUnsignedTypes\nprivate fun partition(\n    array: ULongArray, left: Int, right: Int): Int {\n    var i = left\n    var j = right\n    val pivot = array[(left + right) / 2]\n    while (i <= j) {\n        while (array[i] < pivot)\n            i++\n        while (array[j] > pivot)\n            j--\n        if (i <= j) {\n            val tmp = array[i]\n            array[i] = array[j]\n            array[j] = tmp\n            i++\n            j--\n        }\n    }\n    return i\n}\n\n@ExperimentalUnsignedTypes\nprivate fun

```



```

function parameter will be invoked one or more times.\n    *\n    */\n    // @sample
samples.contracts.callsInPlaceAtLeastOnceContract\n    @ContractsDsl AT_LEAST_ONCE,\n\n    /**\n    * A
function parameter will be invoked exactly one time.\n    *\n    */\n    // @sample
samples.contracts.callsInPlaceExactlyOnceContract\n    @ContractsDsl EXACTLY_ONCE,\n\n    /**\n    * A
function parameter is called in place, but it's unknown how many times it can be called.\n    *\n    */\n    // @sample
samples.contracts.callsInPlaceUnknownContract\n    @ContractsDsl UNKNOWN\n}\n\n/**\n* Specifies the
contract of a function.\n* The contract description must be at the beginning of a function and have at least one
effect.\n* Only the top-level functions can have a contract for now.\n* @param builder the lambda where
the contract of a function is described with the help of the [ContractBuilder] members.\n* */\n*/\n @sample
samples.contracts.returnsContract\n* @sample samples.contracts.returnsTrueContract\n* @sample
samples.contracts.returnsFalseContract\n* @sample samples.contracts.returnsNullContract\n* @sample
samples.contracts.returnsNotNullContract\n* @sample samples.contracts.callsInPlaceAtMostOnceContract\n*
@sample samples.contracts.callsInPlaceAtLeastOnceContract\n* @sample
samples.contracts.callsInPlaceExactlyOnceContract\n* @sample
samples.contracts.callsInPlaceUnknownContract\n*/\n\n@ContractsDsl\n\n@ExperimentalContracts\n\n@InlineOnly\n\n@
SinceKotlin("1.3")\n\n@Suppress("UNUSED_PARAMETER")\n\npublic inline fun contract(builder:
ContractBuilder.() -> Unit) { }\n\n", "/*\n* Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n* Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n* */\n\npackage kotlin.coroutines\n\n/**\n* Marks coroutine context element that
intercepts coroutine continuations.\n* The coroutines framework uses [ContinuationInterceptor.Key] to retrieve the
interceptor and\n* intercepts all coroutine continuations with [interceptContinuation] invocations.\n* */\n*
[ContinuationInterceptor] behaves like a [polymorphic element][AbstractCoroutineContextKey], meaning that\n*
its implementation delegates [get][CoroutineContext.Element.get] and
[minusKey][CoroutineContext.Element.minusKey]\n* to [getPolymorphicElement] and [minusPolymorphicKey]
respectively.\n* [ContinuationInterceptor] subtypes can be extracted from the coroutine context using either
[ContinuationInterceptor.Key]\n* or subtype key if it extends [AbstractCoroutineContextKey].\n\n
*/\n\n@SinceKotlin("1.3")\n\npublic interface ContinuationInterceptor : CoroutineContext.Element {\n    /**\n    *
The key that defines *the* context interceptor.\n    */\n    companion object Key :
CoroutineContext.Key<ContinuationInterceptor>\n\n    /**\n    * Returns continuation that wraps the original
[continuation], thus intercepting all resumptions.\n    * This function is invoked by coroutines framework when
needed and the resulting continuations are\n    * cached internally per each instance of the original [continuation].\n\n    * This function may simply return original [continuation] if it does not want to intercept this particular
continuation.\n    * When the original [continuation] completes, coroutine framework invokes
[releaseInterceptedContinuation]\n    * with the resulting continuation if it was intercepted, that is if
`interceptContinuation` had previously\n    * returned a different continuation instance.\n    */\n    public fun <T>
interceptContinuation(continuation: Continuation<T>): Continuation<T>\n\n    /**\n    * Invoked for the
continuation instance returned by [interceptContinuation] when the original\n    * continuation completes and will
not be used anymore. This function is invoked only if [interceptContinuation]\n    * had returned a different
continuation instance from the one it was invoked with.\n    * Default implementation does nothing.\n    */\n    @param continuation Continuation instance returned by this interceptor's [interceptContinuation] invocation.\n\n    */\n    public fun releaseInterceptedContinuation(continuation: Continuation<*>) {\n        /* do nothing by default
*/\n    }\n\n    public override operator fun <E : CoroutineContext.Element> get(key: CoroutineContext.Key<E>):
E? {\n        // getPolymorphicKey specialized for ContinuationInterceptor key\n\n        @OptIn(ExperimentalStdlibApi::class)\n        if (key is AbstractCoroutineContextKey<*, *>) {\n            @Suppress("UNCHECKED_CAST")\n            return if (key.isSubKey(this.key)) key.tryCast(this) as? E else
null\n        }\n        @Suppress("UNCHECKED_CAST")\n        return if (ContinuationInterceptor === key) this as
E else null\n    }\n\n    public override fun minusKey(key: CoroutineContext.Key<*>): CoroutineContext {\n\n        // minusPolymorphicKey specialized for ContinuationInterceptor key\n

```





```

instances\n * someContext[DerivedElement] // Returns DerivedElement?, non-null only for DerivedElement
instance\n * ```\n * @param B base class of a polymorphic element\n * @param baseKey an instance of base key\n * @param E element type associated with the current key\n * @param safeCast a function that can safely cast
abstract [CoroutineContext.Element] to the concrete [E] type\n * and return the element if it is a subtype
of [E] or `null` otherwise.\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic abstract class
AbstractCoroutineContextKey<B : Element, E : B>(\n    baseKey: Key<B>,\n    private val safeCast: (element:
Element) -> E?)\n) : Key<E> {\n    private val topmostKey: Key<*> = if (baseKey is
AbstractCoroutineContextKey<*, *>) baseKey.topmostKey else baseKey\n\n    internal fun tryCast(element:
Element): E? = safeCast(element)\n    internal fun isSubKey(key: Key<*>): Boolean = key === this || topmostKey
=== key\n}\n\n/**\n * Returns the current element if it is associated with the given [key] in a polymorphic manner
or `null` otherwise.\n * This method returns non-null value if either [Element.key] is equal to the given [key] or if
the [key] is associated\n * with [Element.key] via [AbstractCoroutineContextKey].\n * See
[AbstractCoroutineContextKey] for the example of usage.\n
*/\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun <E : Element>
Element.getPolymorphicElement(key: Key<E>): E? {\n    if (key is AbstractCoroutineContextKey<*, *>) {\n
@Suppress("UNCHECKED_CAST")\n        return if (key.isSubKey(this.key)) key.tryCast(this) as? E else null\n
}\n    @Suppress("UNCHECKED_CAST")\n        return if (this.key === key) this as E else null\n}\n\n/**\n * Returns empty coroutine context if the element is associated with the given [key] in a polymorphic manner\n * or
`null` otherwise.\n * This method returns empty context if either [Element.key] is equal to the given [key] or if the
[key] is associated\n * with [Element.key] via [AbstractCoroutineContextKey].\n * See
[AbstractCoroutineContextKey] for the example of usage.\n
*/\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun Element.minusPolymorphicKey(key: Key<*>):
CoroutineContext {\n    if (key is AbstractCoroutineContextKey<*, *>) {\n        return if (key.isSubKey(this.key)
&& key.tryCast(this) != null) EmptyCoroutineContext else this\n    }\n    return if (this.key === key)
EmptyCoroutineContext else this\n}\n\n/**\n * An empty coroutine context.\n */\n@SinceKotlin("1.3")\npublic
object EmptyCoroutineContext : CoroutineContext, Serializable {\n    private const val serialVersionUID: Long =
0\n    private fun readResolve(): Any = EmptyCoroutineContext\n\n    public override fun <E : Element> get(key:
Key<E>): E? = null\n    public override fun <R> fold(initial: R, operation: (R, Element) -> R): R = initial\n
    public override fun plus(context: CoroutineContext): CoroutineContext = context\n    public override fun
minusKey(key: Key<*>): CoroutineContext = this\n    public override fun hashCode(): Int = 0\n    public override
fun toString(): String = "EmptyCoroutineContext"\n}\n\n//----- internal impl -----\n\n// this class is not
exposed, but is hidden inside implementations\n// this is a left-biased list, so that `plus` works
naturally\n@SinceKotlin("1.3")\ninternal class CombinedContext(\n    private val left: CoroutineContext,\n
private val element: Element\n) : CoroutineContext, Serializable {\n    override fun <E : Element> get(key:
Key<E>): E? {\n        var cur = this\n        while (true) {\n            cur.element[key]?.let { return it }\n
            val next
= cur.left\n            if (next is CombinedContext) {\n                cur = next\n            } else {\n
                return
next[key]\n            }\n        }\n    }\n\n    public override fun <R> fold(initial: R, operation: (R, Element) -> R): R =\n
        operation(left.fold(initial, operation), element)\n\n    public override fun minusKey(key: Key<*>):
CoroutineContext {\n        element[key]?.let { return left }\n        val newLeft = left.minusKey(key)\n        return
when {\n            newLeft === left -> this\n            newLeft === EmptyCoroutineContext -> element\n        }
else ->
CombinedContext(newLeft, element)\n    }\n\n    private fun size(): Int {\n        var cur = this\n        var size
= 2\n        while (true) {\n            cur = cur.left as? CombinedContext ?: return size\n            size++\n
        }\n    }\n\n    private fun contains(element: Element): Boolean =\n        get(element.key) == element\n\n    private fun
containsAll(context: CombinedContext): Boolean {\n        var cur = context\n        while (true) {\n            if
(!contains(cur.element)) return false\n            val next = cur.left\n            if (next is CombinedContext) {\n
                cur = next\n            } else {\n                return contains(next as Element)\n            }\n
        }\n    }\n\n    override fun equals(other: Any?): Boolean =\n        this === other || other is CombinedContext
&& other.size() == size() &&
other.containsAll(this)\n\n    override fun hashCode(): Int = left.hashCode() + element.hashCode()\n\n    override

```

```

fun toString(): String = "\[" + fold("\") { acc, element -> if (acc.isEmpty()) element.toString() else
"$acc, $element" + "\"]"
private fun writeReplace(): Any { val n = size() val elements =
arrayOfNulls<CoroutineContext>(n) var index = 0 fold(Unit) { _, element -> elements[index++] =
element } check(index == n) @Suppress("UNCHECKED_CAST") return Serialized(elements
as Array<CoroutineContext>) }
private class Serialized(val elements: Array<CoroutineContext>) :
Serializable { companion object { private const val serialVersionUID: Long = 0L } }
private fun readResolve(): Any = elements.fold(EmptyCoroutineContext, CoroutineContext::plus)
}
}
"/*
 * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.
 * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.
 */
@file:kotlin.jvm.JvmName("IntrinsicsKt")
@file:kotlin.jvm.JvmMultifileClass
package
kotlin.coroutines.intrinsics
import kotlin.coroutines.*
import kotlin.internal.InlineOnly
/**
 * Obtains the current continuation instance inside suspend functions and either suspends
 * currently running coroutine or returns result immediately without suspension.
 * If the [block] returns the special [COROUTINE_SUSPENDED] value, it means that suspend function did suspend the execution and will
 * not return any result immediately. In this case, the [Continuation] provided to the [block] shall be
 * resumed by invoking [Continuation.resumeWith] at some moment in the
 * future when the result becomes available to resume the computation.
 * Otherwise, the return value of the [block] must have a type assignable to [T] and represents the result of this suspend function.
 * It means that the execution was not suspended and the [Continuation] provided to the [block] shall not be invoked.
 * As the result type of the [block] is declared as `Any?` and cannot be correctly type-checked,
 * its proper return type remains on the conscience of the suspend function's author.
 * Invocation of [Continuation.resumeWith] resumes coroutine directly in the invoker's thread without going through the
 * [ContinuationInterceptor] that might be present in the coroutine's [CoroutineContext].
 * It is the invoker's responsibility to ensure that a proper invocation context is established.
 * [Continuation.intercepted] can be used to acquire the intercepted continuation.
 * Note that it is not recommended to call either [Continuation.resume] nor
 * [Continuation.resumeWithException] functions synchronously
 * in the same stackframe where suspension function is run. Use [suspendCoroutine] as a safer way to obtain current
 * continuation instance.
 */
@SinceKotlin("1.3")
@InlineOnly
@Suppress("UNUSED_PARAMETER", "RedundantSuspendModifier")
public suspend inline fun <T>
suspendCoroutineUninterceptedOrReturn(crossinline block: (Continuation<T>) -> Any?): T = throw
NotImplementedError("Implementation of suspendCoroutineUninterceptedOrReturn is intrinsic")
/**
 * This value is used as a return value of [suspendCoroutineUninterceptedOrReturn] `block` argument to state that
 * the execution was suspended and will not return any result immediately.
 * Note: this value should not be used in general code.
 * Using it outside of the context of `suspendCoroutineUninterceptedOrReturn` function return value
 * (including, but not limited to, storing this value in other properties, returning it from other functions,
 * etc) can lead to unspecified behavior of the code.
 */
// It is implemented as property with getter to avoid ProGuard <clint> problem with multifile IntrinsicsKt class
@SinceKotlin("1.3")
public val
COROUTINE_SUSPENDED: Any get() = CoroutineSingletons.COROUTINE_SUSPENDED
// Using enum here ensures two important properties:
// 1. It makes SafeContinuation serializable with all kinds of serialization frameworks (since all of them natively support enums)
// 2. It improves debugging experience, since you clearly see toString() value of those objects and what package they come from
@SinceKotlin("1.3")
@PublishedApi
// This class is Published API via serialized representation of SafeContinuation, don't rename/move
internal enum class CoroutineSingletons { COROUTINE_SUSPENDED, UNDECIDED, RESUMED }
"/*
 * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.
 * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.
 */
package
kotlin.experimental
/**
 * Performs a bitwise AND operation between the two values.
 */
@SinceKotlin("1.1")
@kotlin.internal.InlineOnly
public inline infix fun Byte.and(other: Byte): Byte =
(this.toInt() and other.toInt()).toByte()
/**
 * Performs a bitwise OR operation between the two values.
 */
@SinceKotlin("1.1")
@kotlin.internal.InlineOnly
public inline infix fun Byte.or(other: Byte): Byte =

```

(this.toInt() or other.toInt()).toByte()\n\n\*\* Performs a bitwise XOR operation between the two values.

```
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline infix fun Byte.xor(other: Byte): Byte =
(this.toInt() xor other.toInt()).toByte()\n\n** Inverts the bits in this value.
```

```
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline fun Byte.inv(): Byte =
(this.toInt().inv()).toByte()\n\n\n** Performs a bitwise AND operation between the two values.
```

```
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline infix fun Short.and(other: Short): Short =
(this.toInt() and other.toInt()).toShort()\n\n\n** Performs a bitwise OR operation between the two values.
```

```
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline infix fun Short.or(other: Short): Short =
(this.toInt() or other.toInt()).toShort()\n\n\n** Performs a bitwise XOR operation between the two values.
```

```
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline infix fun Short.xor(other: Short): Short =
(this.toInt() xor other.toInt()).toShort()\n\n\n** Inverts the bits in this value.
```

```
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline fun Short.inv(): Short =
(this.toInt().inv()).toShort()\n\n\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\npackage kotlin.experimental\n\n**\n * The experimental marker for type
inference augmenting annotations.\n *\n * Any usage of a declaration annotated with
`@ExperimentalTypeInference` must be accepted either by\n * annotating that usage with the [OptIn] annotation,
e.g. `@OptIn(ExperimentalTypeInference::class)`,\n * or by using the compiler argument `-Xopt-
in=kotlin.experimental.ExperimentalTypeInference`.\n *\n@Suppress("DEPRECATION")\n@Experimental(level
= Experimental.Level.ERROR)\n@RequiresOptIn(level =
RequiresOptIn.Level.ERROR)\n@MustBeDocumented\n@Retention(AnnotationRetention.BINARY)\n@Target(A
nnotationTarget.ANNOTATION_CLASS)\n@SinceKotlin("1.3")\npublic annotation class
ExperimentalTypeInference\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\npackage kotlin.internal\n\n**\n * Specifies that the corresponding type should be
ignored during type inference.\n\n*\n@Target(AnnotationTarget.TYPE)\n@Retention(AnnotationRetention.BINARY)\ninternal annotation class
NoInfer\n\n**\n * Specifies that the constraint built for the type during type inference should be an equality one.\n\n*\n@Target(AnnotationTarget.TYPE)\n@Retention(AnnotationRetention.BINARY)\ninternal annotation class
Exact\n\n**\n * Specifies that a corresponding member has the lowest priority in overload resolution.\n\n*\n@Target(AnnotationTarget.FUNCTION,
AnnotationTarget.PROPERTY)\n@Retention(AnnotationRetention.BINARY)\ninternal annotation class
LowPriorityInOverloadResolution\n\n**\n * Specifies that the corresponding member has the highest priority in
overload resolution. Effectively this means that\n * an extension annotated with this annotation will win in overload
resolution over a member with the same signature.\n *\n@Target(AnnotationTarget.FUNCTION,
AnnotationTarget.PROPERTY)\n@Retention(AnnotationRetention.BINARY)\ninternal annotation class
HidesMembers\n\n**\n * The value of this type parameter should be mentioned in input types (argument types,
receiver type or expected type).\n\n*\n@Target(AnnotationTarget.TYPE_PARAMETER)\n@Retention(AnnotationRetention.BINARY)\ninternal
annotation class OnlyInputTypes\n\n**\n * Specifies that this function should not be called directly without
inlining\n *\n@Target(AnnotationTarget.FUNCTION, AnnotationTarget.PROPERTY,
AnnotationTarget.PROPERTY_GETTER,
AnnotationTarget.PROPERTY_SETTER)\n@Retention(AnnotationRetention.BINARY)\ninternal annotation class
InlineOnly\n\n**\n * Specifies that this declaration can have dynamic receiver type.\n\n*\n@Target(AnnotationTarget.FUNCTION,
AnnotationTarget.PROPERTY)\n@Retention(AnnotationRetention.BINARY)\ninternal annotation class
DynamicExtension\n\n**\n * The value of this parameter should be a property reference expression (`this::foo`),
referencing a `lateinit` property,\n * the backing field of which is accessible at the point where the corresponding

```

argument is passed.\n

```
*\n@Target(AnnotationTarget.VALUE_PARAMETER)\n@Retention(AnnotationRetention.BINARY)\n@SinceKotlin("1.2")\ninternal annotation class AccessibleLateinitPropertyLiteral\n\n/**\n * Specifies that this declaration is only completely supported since the specified version.\n * The Kotlin compiler of an earlier version is going to report a diagnostic on usages of this declaration.\n * The diagnostic message can be specified with [message], or via [errorCode] (takes less space, but might not be immediately clear\n * to the user). The diagnostic severity can be specified with [level]: WARNING/ERROR mean that either a warning or an error\n * is going to be reported, HIDDEN means that the declaration is going to be removed from resolution completely.\n * [versionKind] specifies which version should be compared with the [version] value, when compiling the usage of the annotated declaration.\n * Note that prior to 1.2, only [RequireKotlinVersionKind.LANGUAGE_VERSION] was supported, so the Kotlin compiler before 1.2 is going to\n * treat any [RequireKotlin] as if it requires the language version. Since 1.2, the Kotlin compiler supports\n * [RequireKotlinVersionKind.LANGUAGE_VERSION], [RequireKotlinVersionKind.COMPILER_VERSION] and [RequireKotlinVersionKind.API_VERSION].\n * If the actual value of [versionKind] is something different (e.g. a new version kind, added in future versions of Kotlin),\n * Kotlin 1.2 is going to ignore this [RequireKotlin] altogether, where as Kotlin before 1.2 is going to treat this as a requirement\n * on the language version.\n * This annotation is erased at compile time; its arguments are stored in a more compact form in the Kotlin metadata.\n *\n@Target(AnnotationTarget.CLASS, AnnotationTarget.FUNCTION, AnnotationTarget.PROPERTY, AnnotationTarget.CONSTRUCTOR, AnnotationTarget.TYPEALIAS)\n@Retention(AnnotationRetention.SOURCE)\n@Repeatable\n@SinceKotlin("1.2")\ninternal annotation class RequireKotlin(\n    val version: String,\n    val message: String = "",\n    val level: DeprecationLevel = DeprecationLevel.ERROR,\n    val versionKind: RequireKotlinVersionKind = RequireKotlinVersionKind.LANGUAGE_VERSION,\n    val errorCode: Int = -1\n)\n\n/**\n * The kind of the version that is required by [RequireKotlin].\n *\n@SinceKotlin("1.2")\ninternal enum class RequireKotlinVersionKind {\n    LANGUAGE_VERSION,\n    COMPILER_VERSION,\n    API_VERSION,\n}\n\n/**\n * Specifies that this declaration is a part of special DSL, used for constructing function's contract.\n *\n@Retention(AnnotationRetention.BINARY)\n@SinceKotlin("1.2")\ninternal annotation class ContractsDsl\n\n"/**\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n *\npackage kotlin.properties\n\nimport kotlin.reflect.KProperty\n\n/**\n * Standard property delegates.\n *\npublic object Delegates {\n    /**\n     * Returns a property delegate for a read/write property with a non-`null` value that is initialized not during\n     * object construction time but at a later time. Trying to read the property before the initial value has been\n     * assigned results in an exception.\n     *\n     * @sample samples.properties.Delegates.notNullDelegate\n     *\n     * public fun <T : Any> notNull():\n     * ReadWriteProperty<Any?, T> = NotNullVar()\n     *\n     * Returns a property delegate for a read/write property that calls a specified callback function when changed.\n     * @param initialValue the initial value of the property.\n     * @param onChange the callback which is called after the change of the property is made. The value of the property\n     * has already been changed when this callback is invoked.\n     *\n     * @sample samples.properties.Delegates.observableDelegate\n     *\n     * public inline fun <T> observable(initialValue: T, crossinline onChange: (property: KProperty<*>, oldValue: T, newValue: T) -> Unit):\n     * ReadWriteProperty<Any?, T> =\n     *     object : ObservableProperty<T>(initialValue) {\n     *         override fun afterChange(property: KProperty<*>, oldValue: T, newValue: T) = onChange(property, oldValue, newValue)\n     *     }\n     *\n     * Returns a property delegate for a read/write property that calls a specified callback function when changed,\n     * allowing the callback to veto the modification.\n     * @param initialValue the initial value of the property.\n     * @param onChange the callback which is called before a change to the property value is attempted.\n     *\n     * The value of the property hasn't been changed yet, when this callback is invoked.\n     * If the callback returns `true` the value of the property is being set to the new value,\n     * and if the callback returns `false` the new value is discarded and the property remains its old value.\n     *\n     * @sample samples.properties.Delegates.vetoableDelegate\n     *\n     * @sample
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samples.properties.Delegates.throwVetoableDelegate\n    *\n    public inline fun <T> vetoable(initialValue: T,
crossinline onChange: (property: KProperty<*>, oldValue: T, newValue: T) -> Boolean):\n
ReadWriteProperty<Any?, T> =\n    object : ObservableProperty<T>(initialValue) {\n        override fun
beforeChange(property: KProperty<*>, oldValue: T, newValue: T): Boolean = onChange(property, oldValue,
newValue)\n    }\n\n\nprivate class NotNullVar<T : Any>() : ReadWriteProperty<Any?, T> {\n    private var
value: T? = null\n    public override fun getValue(thisRef: Any?, property: KProperty<*>): T {\n        return value
?: throw IllegalStateException("\nProperty ${property.name} should be initialized before get.\n")\n    }\n    public
override fun setValue(thisRef: Any?, property: KProperty<*>, value: T) {\n        this.value = value\n
}\n}\n\n"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of
this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*/\n\npackage kotlin.properties\n\nimport kotlin.reflect.KProperty\n\n/**\n * Implements the core logic of a
property delegate for a read/write property that calls callback functions when changed.\n * @param initialValue the
initial value of the property.\n */\npublic abstract class ObservableProperty<T>(initialValue: T) :
ReadWriteProperty<Any?, T> {\n    private var value = initialValue\n\n    /**\n     * The callback which is called
before a change to the property value is attempted.\n     * The value of the property hasn't been changed yet, when
this callback is invoked.\n     * If the callback returns `true` the value of the property is being set to the new value,\n
     * and if the callback returns `false` the new value is discarded and the property remains its old value.\n     */\n    protected open fun beforeChange(property: KProperty<*>, oldValue: T, newValue: T): Boolean = true\n\n    /**\n     * The callback which is called after the change of the property is made. The value of the property\n     * has already
been changed when this callback is invoked.\n     */\n    protected open fun afterChange(property: KProperty<*>,
oldValue: T, newValue: T): Unit {} \n\n    public override fun getValue(thisRef: Any?, property: KProperty<*>): T
{\n        return value\n    }\n\n    public override fun setValue(thisRef: Any?, property: KProperty<*>, value: T) {\n
        val oldValue = this.value\n        if (!beforeChange(property, oldValue, value)) {\n            return\n        }\n
this.value = value\n        afterChange(property, oldValue, value)\n    }\n}\n\n"/*\n * Copyright 2010-2018 JetBrains
s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0
license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.random\n\nimport
kotlin.math.nextDown\n\n/**\n * An abstract class that is implemented by random number generator algorithms.\n
*/\n * The companion object [Random.Default] is the default instance of [Random].\n */\n * To get a seeded instance
of random generator use [Random] function.\n */\n * @sample samples.random.Randoms.defaultRandom\n
*/\n@SinceKotlin("1.3")\npublic abstract class Random {\n\n    /**\n     * Gets the next random [bitCount] number
of bits.\n     */\n     * Generates an `Int` whose lower [bitCount] bits are filled with random values and the remaining
upper bits are zero.\n     */\n     * @param bitCount number of bits to generate, must be in range 0..32, otherwise the
behavior is unspecified.\n     */\n    public abstract fun nextBits(bitCount: Int): Int\n\n    /**\n     * Gets the next
random `Int` from the random number generator.\n     */\n     * Generates an `Int` random value uniformly distributed
between `Int.MIN_VALUE` and `Int.MAX_VALUE` (inclusive).\n     */\n    public open fun nextInt(): Int =
nextBits(32)\n\n    /**\n     * Gets the next random non-negative `Int` from the random number generator less than
the specified [until] bound.\n     */\n     * Generates an `Int` random value uniformly distributed between `0`
(inclusive) and the specified [until] bound (exclusive).\n     */\n     * @param until must be positive.\n     */\n     *
@throws IllegalArgumentException if [until] is negative or zero.\n     */\n    public open fun nextInt(until: Int): Int =
nextInt(0, until)\n\n    /**\n     * Gets the next random `Int` from the random number generator in the specified
range.\n     */\n     * Generates an `Int` random value uniformly distributed between the specified [from] (inclusive)
and [until] (exclusive) bounds.\n     */\n     * @throws IllegalArgumentException if [from] is greater than or equal to
[until].\n     */\n    public open fun nextInt(from: Int, until: Int): Int {\n        checkRangeBounds(from, until)\n
val n = until - from\n        if (n > 0 || n == Int.MIN_VALUE) {\n            val rnd = if (n and -n == n) {\n                val
bitCount = fastLog2(n)\n                nextBits(bitCount)\n            } else {\n                var v: Int\n                do {\n
                    val bits = nextInt().ushr(1)\n                    v = bits % n\n                } while (bits - v + (n - 1) < 0)\n                v\n
            }\n            return from + rnd\n        } else {\n            while (true) {\n                val rnd = nextInt()\n                if
(rnd in from until until) return rnd\n            }\n        }\n    }\n\n    /**\n     * Gets the next random `Long` from the

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random number generator.\n * \n * Generates a `Long` random value uniformly distributed between
`Long.MIN_VALUE` and `Long.MAX_VALUE` (inclusive).\n * \n public open fun nextLong(): Long =
nextInt().toLong().shl(32) + nextInt()\n\n /** \n * Gets the next random non-negative `Long` from the random
number generator less than the specified [until] bound.\n * \n * Generates a `Long` random value uniformly
distributed between `0` (inclusive) and the specified [until] bound (exclusive).\n * \n * @param until must be
positive.\n * \n * @throws IllegalArgumentException if [until] is negative or zero.\n * \n public open fun
nextLong(until: Long): Long = nextLong(0, until)\n\n /** \n * Gets the next random `Long` from the random
number generator in the specified range.\n * \n * Generates a `Long` random value uniformly distributed
between the specified [from] (inclusive) and [until] (exclusive) bounds.\n * \n * @throws
IllegalArgumentException if [from] is greater than or equal to [until].\n * \n public open fun nextLong(from:
Long, until: Long): Long {\n    checkRangeBounds(from, until)\n    val n = until - from\n    if (n > 0) {\n
    val rnd: Long\n        if (n and -n == n) {\n            val nLow = n.toInt()\n            val nHigh = (n ushr
32).toInt()\n            rnd = when {\n                nLow != 0 -> {\n                    val bitCount = fastLog2(nLow)\n
                // toUInt().toLong()\n                    nextBits(bitCount).toLong() and 0xFFFF_FFFF\n                }\n
                nHigh == 1 ->{\n                    // toUInt().toLong()\n                    nextInt().toLong() and
0xFFFF_FFFF\n                } else -> {\n                    val bitCount = fastLog2(nHigh)\n
                nextBits(bitCount).toLong().shl(32) + nextInt()\n                }\n            } else {\n                var v:
Long\n                do {\n                    val bits = nextLong().ushr(1)\n                    v = bits % n\n                } while (bits
- v + (n - 1) < 0)\n                rnd = v\n            }\n            return from + rnd\n        } else {\n            while (true) {\n
                val rnd = nextLong()\n                if (rnd in from until until) return rnd\n            }\n        }\n    }\n\n /** \n *
Gets the next random [Boolean] value.\n * \n public open fun nextBoolean(): Boolean = nextBits(1) != 0\n\n /** \n *
Gets the next random [Double] value uniformly distributed between 0 (inclusive) and 1 (exclusive).\n * \n
public open fun nextDouble(): Double = doubleFromParts(nextBits(26), nextBits(27))\n\n /** \n * Gets
the next random non-negative `Double` from the random number generator less than the specified [until] bound.\n
* \n * Generates a `Double` random value uniformly distributed between 0 (inclusive) and [until] (exclusive).\n
* \n * @throws IllegalArgumentException if [until] is negative or zero.\n * \n public open fun
nextDouble(until: Double): Double = nextDouble(0.0, until)\n\n /** \n * Gets the next random `Double` from
the random number generator in the specified range.\n * \n * Generates a `Double` random value uniformly
distributed between the specified [from] (inclusive) and [until] (exclusive) bounds.\n * \n * [from] and [until]
must be finite otherwise the behavior is unspecified.\n * \n * @throws IllegalArgumentException if [from] is
greater than or equal to [until].\n * \n public open fun nextDouble(from: Double, until: Double): Double {\n
    checkRangeBounds(from, until)\n    val size = until - from\n    val r = if (size.isInfinite() && from.isFinite()
&& until.isFinite()) {\n        val r1 = nextDouble() * (until / 2 - from / 2)\n        from + r1 + r1\n    } else {\n
        from + nextDouble() * size\n    }\n    return if (r >= until) until.nextDown() else r\n }\n\n /** \n *
Gets the next random [Float] value uniformly distributed between 0 (inclusive) and 1 (exclusive).\n * \n public
open fun nextFloat(): Float = nextBits(24) / (1 shl 24).toFloat()\n\n /** \n * Fills a subrange of the specified byte
[array] starting from [fromIndex] inclusive and ending [toIndex] exclusive\n * with random bytes.\n * \n *
@return [array] with the subrange filled with random bytes.\n * \n public open fun nextBytes(array: ByteArray,
fromIndex: Int = 0, toIndex: Int = array.size): ByteArray {\n    require(fromIndex in 0..array.size && toIndex in
0..array.size) { \"fromIndex ($fromIndex) or toIndex ($toIndex) are out of range: 0..${array.size}.\" }\n
    require(fromIndex <= toIndex) { \"fromIndex ($fromIndex) must be not greater than toIndex ($toIndex).\" }\n\n
    val steps = (toIndex - fromIndex) / 4\n    var position = fromIndex\n    repeat(steps) {\n        val v =
nextInt()\n        array[position] = v.toByte()\n        array[position + 1] = v.ushr(8).toByte()\n
        array[position + 2] = v.ushr(16).toByte()\n        array[position + 3] = v.ushr(24).toByte()\n        position += 4\n
    }\n\n    val remainder = toIndex - position\n    val vr = nextBits(remainder * 8)\n    for (i in 0 until
remainder) {\n        array[position + i] = vr.ushr(i * 8).toByte()\n    }\n    return array\n }\n\n /** \n *
Fills the specified byte [array] with random bytes and returns it.\n * \n * @return [array] filled with random
bytes.\n * \n public open fun nextBytes(array: ByteArray): ByteArray = nextBytes(array, 0, array.size)\n\n

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/**\n * Creates a byte array of the specified [size], filled with random bytes.\n */\n public open fun
nextBytes(size: Int): ByteArray = nextBytes(ByteArray(size))\n\n /**\n * The default random number
generator.\n */\n * On JVM this generator is thread-safe, its methods can be invoked from multiple threads.\n
*\n * @sample samples.random.Randoms.defaultRandom\n */\n companion object Default : Random() {\n\n
private val defaultRandom: Random = defaultPlatformRandom()\n\n override fun nextBits(bitCount: Int): Int =
defaultRandom.nextBits(bitCount)\n\n override fun nextInt(): Int = defaultRandom.nextInt()\n\n override fun
nextInt(until: Int): Int = defaultRandom.nextInt(until)\n\n override fun nextInt(from: Int, until: Int): Int =
defaultRandom.nextInt(from, until)\n\n override fun nextLong(): Long = defaultRandom.nextLong()\n\n
override fun nextLong(until: Long): Long = defaultRandom.nextLong(until)\n\n override fun nextLong(from:
Long, until: Long): Long = defaultRandom.nextLong(from, until)\n\n override fun nextBoolean(): Boolean =
defaultRandom.nextBoolean()\n\n override fun nextDouble(): Double = defaultRandom.nextDouble()\n\n
override fun nextDouble(until: Double): Double = defaultRandom.nextDouble(until)\n\n override fun
nextDouble(from: Double, until: Double): Double = defaultRandom.nextDouble(from, until)\n\n override fun
nextFloat(): Float = defaultRandom.nextFloat()\n\n override fun nextBytes(array: ByteArray): ByteArray =
defaultRandom.nextBytes(array)\n\n override fun nextBytes(size: Int): ByteArray =
defaultRandom.nextBytes(size)\n\n override fun nextBytes(array: ByteArray, fromIndex: Int, toIndex: Int):
ByteArray = defaultRandom.nextBytes(array, fromIndex, toIndex)\n\n @Deprecated("Use Default companion
object instead", level = DeprecationLevel.HIDDEN)\n\n @Suppress("DEPRECATION_ERROR")\n\n
@kotlin.jvm.JvmField\n\n public val Companion: Random.Companion = Random.Companion\n\n }\n\n
@Deprecated("Use Default companion object instead", level = DeprecationLevel.HIDDEN)\n\n public object
Companion : Random() {\n\n override fun nextBits(bitCount: Int): Int = Default.nextBits(bitCount)\n
}\n}\n\n/**\n * Returns a repeatable random number generator seeded with the given [seed] `Int` value.\n */\n * Two
generators with the same seed produce the same sequence of values within the same version of Kotlin runtime.\n */\n
* *Note:* Future versions of Kotlin may change the algorithm of this seeded number generator so that it will
return\n * a sequence of values different from the current one for a given seed.\n */\n * @sample
samples.random.Randoms.seededRandom\n */\n\n@SinceKotlin("1.3")\n\npublic fun Random(seed: Int): Random =
XorWowRandom(seed, seed.shr(31))\n\n/**\n * Returns a repeatable random number generator seeded with the
given [seed] `Long` value.\n */\n * Two generators with the same seed produce the same sequence of values within
the same version of Kotlin runtime.\n */\n * *Note:* Future versions of Kotlin may change the algorithm of this
seeded number generator so that it will return\n * a sequence of values different from the current one for a given
seed.\n */\n * @sample samples.random.Randoms.seededRandom\n */\n\n@SinceKotlin("1.3")\n\npublic fun
Random(seed: Long): Random = XorWowRandom(seed.toInt(), seed.shr(32).toInt())\n\n\n\n/**\n * Gets the next
random `Int` from the random number generator in the specified [range].\n */\n * Generates an `Int` random value
uniformly distributed in the specified [range]:\n * from `range.start` inclusive to `range.endInclusive` inclusive.\n
*\n * @throws IllegalArgumentException if [range] is empty.\n */\n\n@SinceKotlin("1.3")\n\npublic fun
Random.nextInt(range: IntRange): Int = when {\n\n range.isEmpty() -> throw IllegalArgumentException("Cannot
get random in empty range: $range")\n\n range.last < Int.MAX_VALUE -> nextInt(range.first, range.last + 1)\n\n
range.first > Int.MIN_VALUE -> nextInt(range.first - 1, range.last) + 1\n\n else -> nextInt()\n}\n\n\n/**\n * Gets the
next random `Long` from the random number generator in the specified [range].\n */\n * Generates a `Long` random
value uniformly distributed in the specified [range]:\n * from `range.start` inclusive to `range.endInclusive`
inclusive.\n */\n * @throws IllegalArgumentException if [range] is empty.\n */\n\n@SinceKotlin("1.3")\n\npublic fun
Random.nextLong(range: LongRange): Long = when {\n\n range.isEmpty() -> throw
IllegalArgumentException("Cannot get random in empty range: $range")\n\n range.last < Long.MAX_VALUE ->
nextLong(range.first, range.last + 1)\n\n range.first > Long.MIN_VALUE -> nextLong(range.first - 1, range.last) +
1\n\n else -> nextLong()\n}\n\n\ninternal expect fun defaultPlatformRandom(): Random\n\ninternal expect fun
doubleFromParts(hi26: Int, low27: Int): Double\n\n@UseExperimental(ExperimentalStdlibApi::class)\n\ninternal fun
fastLog2(value: Int): Int = 31 - value.countLeadingZeroBits()\n\n/**\n * Takes upper [bitCount] bits (0..32) from this
number. */\n\ninternal fun Int.takeUpperBits(bitCount: Int): Int =\n\n this.ushr(32 - bitCount) and (-

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bitCount).shr(31)\n\ninternal fun checkRangeBounds(from: Int, until: Int) = require(until > from) {
boundsErrorMessage(from, until) }\n\ninternal fun checkRangeBounds(from: Long, until: Long) = require(until >
from) { boundsErrorMessage(from, until) }\n\ninternal fun checkRangeBounds(from: Double, until: Double) =
require(until > from) { boundsErrorMessage(from, until) }\n\ninternal fun boundsErrorMessage(from: Any, until:
Any) = \"Random range is empty: [$from, $until].\"*\n\", \"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin
Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be
found in the license/LICENSE.txt file.\n *^\n\npackage kotlin.random\n\n/**\n * Gets the next random [UInt]
from the random number generator.\n *^\n * Generates a [UInt] random value uniformly distributed between
[UInt.MIN_VALUE] and [UInt.MAX_VALUE] (inclusive).\n
*^\n@SinceKotlin(\"1.3\")\n@ExperimentalUnsignedTypes\npublic fun Random.nextUInt(): UInt =
nextInt().toUInt()\n\n/**\n * Gets the next random [UInt] from the random number generator less than the specified
[until] bound.\n *^\n * Generates a [UInt] random value uniformly distributed between `0` (inclusive) and the
specified [until] bound (exclusive).\n *^\n * @throws IllegalArgumentException if [until] is zero.\n
*^\n@SinceKotlin(\"1.3\")\n@ExperimentalUnsignedTypes\npublic fun Random.nextUInt(until: UInt): UInt =
nextUInt(0u, until)\n\n/**\n * Gets the next random [UInt] from the random number generator in the specified
range.\n *^\n * Generates a [UInt] random value uniformly distributed between the specified [from] (inclusive) and
[until] (exclusive) bounds.\n *^\n * @throws IllegalArgumentException if [from] is greater than or equal to [until].\n
*^\n@SinceKotlin(\"1.3\")\n@ExperimentalUnsignedTypes\npublic fun Random.nextUInt(from: UInt, until: UInt):
UInt {\n    checkUIntRangeBounds(from, until)\n    val signedFrom = from.toInt() xor Int.MIN_VALUE\n    val
signedUntil = until.toInt() xor Int.MIN_VALUE\n    val signedResult = nextInt(signedFrom, signedUntil) xor
Int.MIN_VALUE\n    return signedResult.toUInt()\n}\n\n/**\n * Gets the next random [UInt] from the random
number generator in the specified [range].\n *^\n * Generates a [UInt] random value uniformly distributed in the
specified [range]:\n *^\n * from `range.start` inclusive to `range.endInclusive` inclusive.\n *^\n * @throws
IllegalArgumentException if [range] is empty.\n *^\n@SinceKotlin(\"1.3\")\n@ExperimentalUnsignedTypes\npublic
fun Random.nextUInt(range: UIntRange): UInt = when {\n    range.isEmpty() -> throw
IllegalArgumentException(\"Cannot get random in empty range: $range\")\n    range.last < UInt.MAX_VALUE ->
nextUInt(range.first, range.last + 1u)\n    range.first > UInt.MIN_VALUE -> nextUInt(range.first - 1u, range.last) +
1u\n    else -> nextUInt()\n}\n\n/**\n * Gets the next random [ULong] from the random number generator.\n *^\n *
Generates a [ULong] random value uniformly distributed between [ULong.MIN_VALUE] and
[ULong.MAX_VALUE] (inclusive).\n *^\n@SinceKotlin(\"1.3\")\n@ExperimentalUnsignedTypes\npublic fun
Random.nextULong(): ULong = nextLong().toULong()\n\n/**\n * Gets the next random [ULong] from the random
number generator less than the specified [until] bound.\n *^\n * Generates a [ULong] random value uniformly
distributed between `0` (inclusive) and the specified [until] bound (exclusive).\n *^\n * @throws
IllegalArgumentException if [until] is zero.\n *^\n@SinceKotlin(\"1.3\")\n@ExperimentalUnsignedTypes\npublic
fun Random.nextULong(until: ULong): ULong = nextULong(0uL, until)\n\n/**\n * Gets the next random [ULong]
from the random number generator in the specified range.\n *^\n * Generates a [ULong] random value uniformly
distributed between the specified [from] (inclusive) and [until] (exclusive) bounds.\n *^\n * @throws
IllegalArgumentException if [from] is greater than or equal to [until].\n
*^\n@SinceKotlin(\"1.3\")\n@ExperimentalUnsignedTypes\npublic fun Random.nextULong(from: ULong, until:
ULong): ULong {\n    checkULongRangeBounds(from, until)\n    val signedFrom = from.toLong() xor
Long.MIN_VALUE\n    val signedUntil = until.toLong() xor Long.MIN_VALUE\n    val signedResult =
nextLong(signedFrom, signedUntil) xor Long.MIN_VALUE\n    return signedResult.toULong()\n}\n\n/**\n * Gets
the next random [ULong] from the random number generator in the specified [range].\n *^\n * Generates a [ULong]
random value uniformly distributed in the specified [range]:\n *^\n * from `range.start` inclusive to `range.endInclusive`
inclusive.\n *^\n * @throws IllegalArgumentException if [range] is empty.\n
*^\n@SinceKotlin(\"1.3\")\n@ExperimentalUnsignedTypes\npublic fun Random.nextULong(range: ULongRange):
ULong = when {\n    range.isEmpty() -> throw IllegalArgumentException(\"Cannot get random in empty range:
$range\")\n    range.last < ULong.MAX_VALUE -> nextULong(range.first, range.last + 1u)\n    range.first >

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ULong.MIN_VALUE -> nextULong(range.first - 1u, range.last) + 1u\n else -> nextULong()\n\n/**\n * Fills
the specified unsigned byte [array] with random bytes and returns it.\n *\n * @return [array] filled with random
bytes.\n *\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun Random.nextUBytes(array:
UByteArray): UByteArray {\n nextBytes(array.asByteArray())\n return array\n}\n\n/**\n * Creates an unsigned
byte array of the specified [size], filled with random bytes.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun Random.nextUBytes(size: Int): UByteArray
= nextBytes(size).asUByteArray()\n\n/**\n * Fills a subrange of the specified `UByte` [array] starting from
[fromIndex] inclusive and ending [toIndex] exclusive with random UBytes.\n *\n * @return [array] with the
subrange filled with random bytes.\n *\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
Random.nextUBytes(array: UByteArray, fromIndex: Int = 0, toIndex: Int = array.size): UByteArray {\n
nextBytes(array.asByteArray(), fromIndex, toIndex)\n return
array\n}\n\n@ExperimentalUnsignedTypes\ninternal fun checkUIntRangeBounds(from: UInt, until: UInt) =
require(until > from) { boundsErrorMessage(from, until) }\n@ExperimentalUnsignedTypes\ninternal fun
checkULongRangeBounds(from: ULong, until: ULong) = require(until > from) { boundsErrorMessage(from, until)
}\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this
source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*\n\npackage kotlin.random\n\n/**\n * Random number generator, using Marsaglia's "xorwow" algorithm\n *\n *
Cycles after 2^192 - 2^32 repetitions.\n *\n * For more details, see Marsaglia, George (July 2003). "Xorshift
RNGs". Journal of Statistical Software. 8 (14). doi:10.18637/jss.v008.i14\n *\n * Available at
https://www.jstatsoft.org/v08/i14/paper\n *\n@internal class XorWowRandom\ninternal constructor(\n private
var x: Int,\n private var y: Int,\n private var z: Int,\n private var w: Int,\n private var v: Int,\n private var
addend: Int\n) : Random() {\n internal constructor(seed1: Int, seed2: Int) : \n this(seed1, seed2, 0, 0,
seed1.inv(), (seed1 shl 10) xor (seed2 ushr 4))\n\n init {\n require((x or y or z or w or v) != 0) { "Initial state
must have at least one non-zero element." }\n\n // some trivial seeds can produce several values with zeroes in
upper bits, so we discard first 64\n repeat(64) { nextInt() }\n }\n\n override fun nextInt(): Int {\n //
Equivalent to the xorwow algorithm\n // From Marsaglia, G. 2003. Xorshift RNGs. J. Statis. Soft. 8, 14, p. 5\n
var t = x\n t = t xor (t ushr 2)\n x = y\n y = z\n z = w\n val v0 = v\n w = v0\n t = (t
xor (t shl 1)) xor v0 xor (v0 shl 4)\n v = t\n addend += 362437\n return t + addend\n }\n\n override
fun nextBits(bitCount: Int): Int = \n nextInt().takeUpperBits(bitCount)\n}\n", "/*\n * Copyright 2010-2018
JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the
Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("RangesKt")\n\npackage
kotlin.ranges\n\n/**\n * Represents a range of [Comparable] values.\n *\nprivate open class ComparableRange<T :
Comparable<T>>(\n override val start: T,\n override val endInclusive: T\n) : ClosedRange<T> {\n\n override
fun equals(other: Any?): Boolean {\n return other is ComparableRange<*> && (isEmpty() && other.isEmpty())
|| \n start == other.start && endInclusive == other.endInclusive)\n }\n\n override fun hashCode(): Int
{\n return if (isEmpty()) -1 else 31 * start.hashCode() + endInclusive.hashCode()\n }\n\n override fun
toString(): String = "$start..$endInclusive"\n}\n\n/**\n * Creates a range from this [Comparable] value to the
specified [that] value.\n *\n * This value needs to be smaller than [that] value, otherwise the returned range will be
empty.\n *\n * @sample samples.ranges.Ranges.rangeFromComparable\n *\npublic operator fun <T :
Comparable<T>> T.rangeTo(that: T): ClosedRange<T> = ComparableRange(this, that)\n\n\n/**\n * Represents a
range of floating point numbers.\n * Extends [ClosedRange] interface providing custom operation
[lessThanOrEquals] for comparing values of range domain type.\n *\n * This interface is implemented by floating
point ranges returned by [Float.rangeTo] and [Double.rangeTo] operators to\n * achieve IEEE-754 comparison order
instead of total order of floating point numbers.\n *\n@SinceKotlin("1.1")\npublic interface
ClosedFloatingPointRange<T : Comparable<T>> : ClosedRange<T> {\n override fun contains(value: T): Boolean
= lessThanOrEquals(start, value) && lessThanOrEquals(value, endInclusive)\n override fun isEmpty(): Boolean =
!lessThanOrEquals(start, endInclusive)\n\n /**\n * Compares two values of range domain type and returns true

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by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.reflect\n\n/**\n * Returns a runtime representation of the given reified type [T] as an instance of [KType].\n */\n\n@Suppress("unused") // KT-12448\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun\n<reified T> typeOf(): KType =\n    throw UnsupportedOperationException("This function is implemented as an\nintrinsic on all supported platforms.")\n"/*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming\nLanguage contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the\nlicense/LICENSE.txt file.\n */\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("StringsKt")\n\npackage\nkotlin.text\n\n/**\n * An object to which char sequences and values can be appended.\n */\n\nexpect interface\nAppendable {\n    /**\n     * Appends the specified character [value] to this Appendable and returns this instance.\n     *\n     * @param value the character to append.\n     */\n    fun append(value: Char): Appendable\n\n    /**\n     * Appends the specified character sequence [value] to this Appendable and returns this instance.\n     *\n     * @param value the character sequence to append. If [value] is `null`, then the four characters\n     * `\\`null` are appended to this Appendable.\n     */\n    fun append(value: CharSequence?): Appendable\n\n    /**\n     * Appends a subsequence of the specified character sequence [value] to this Appendable and\n     * returns this instance.\n     *\n     * @param value the character sequence from which a subsequence is appended. If [value] is\n     * `null`, then characters are appended as if [value] contained the four characters `\\`null`.\n     * @param startIndex the beginning (inclusive) of the subsequence to append.\n     * @param endIndex the end (exclusive) of the subsequence to append.\n     *\n     * @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex]\n     * is out of range of the [value] character sequence indices or when `startIndex > endIndex`.\n     */\n    fun append(value: CharSequence?, startIndex: Int, endIndex: Int): Appendable\n\n    /**\n     * Appends a subsequence of the specified character sequence [value] to this Appendable and\n     * returns this instance.\n     *\n     * @param value the character sequence from which a subsequence is appended. If [value] is\n     * `null`, then characters are appended as if [value] contained the four characters `\\`null`.\n     * @param startIndex the beginning (inclusive) of the subsequence to append.\n     * @param endIndex the end (exclusive) of the subsequence to append.\n     *\n     * @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex]\n     * is out of range of the [value] character sequence indices or when `startIndex > endIndex`.\n     */\n    fun append(value: CharSequence?, startIndex: Int, endIndex: Int): T {\n        @Suppress("UNCHECKED_CAST")\n        return\n        append(value, startIndex, endIndex) as T\n    }\n\n    /**\n     * Appends all arguments to the given [Appendable].\n     */\n\n    public fun <T : Appendable> T.append(vararg value: CharSequence?): T {\n        for (item in value)\n            append(item)\n        return this\n    }\n\n    internal fun <T> Appendable.appendElement(element: T, transform: ((T) ->\n        CharSequence?) {\n        when {\n            transform != null -> append(transform(element))\n            element is\n            CharSequence? -> append(element)\n            element is Char -> append(element)\n            else ->\n            append(element.toString())\n        }\n    })\n"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming\nLanguage contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the\nlicense/LICENSE.txt file.\n */\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("CharsKt")\n\npackage kotlin.text\n\n/**\n * Concatenates this Char and a String.\n */\n\n@sample samples.text.Chars.plus\n\n@kotlin.internal.InlineOnly\npublic inline operator fun Char.plus(other: String): String = this.toString() +\n    other\n\n/**\n * Returns `true` if this character is equal to the [other] character, optionally ignoring character case.\n */\n\n@sample samples.text.Chars.equals\n\n@kotlin.internal.InlineOnly\npublic inline operator fun Char.equals(other: Char, ignoreCase: Boolean = false): Boolean {\n    if (this == other) return true\n    if (!ignoreCase) return false\n    if (this.toUpperCase() ==\n        other.toUpperCase()) return true\n    if (this.toLowerCase() == other.toLowerCase()) return true\n    return

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false\n}\n\n/**\n * Returns `true` if this character is a Unicode surrogate code unit.\n */\npublic fun
Char.isSurrogate(): Boolean = this in Char.MIN_SURROGATE..Char.MAX_SURROGATE\n", "/*\n * Copyright
2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed
by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*/\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("StringsKt")\n\npackage
kotlin.text\n\n/**\n * Trims leading whitespace characters followed by [marginPrefix] from every line of a source
string and removes\n * the first and the last lines if they are blank (notice difference blank vs empty).\n *\n * Doesn't
affect a line if it doesn't contain [marginPrefix] except the first and the last blank lines.\n *\n * Doesn't preserve the
original line endings.\n *\n * @param marginPrefix non-blank string, which is used as a margin delimiter. Default is
`|` (pipe character).\n *\n * @sample samples.text.Strings.trimMargin\n * @see trimIndent\n * @see
kotlin.text.isWhitespace\n */\npublic fun String.trimMargin(marginPrefix: String = "|"): String =\n
replaceIndentByMargin("|", marginPrefix)\n\n/**\n * Detects indent by [marginPrefix] as it does [trimMargin] and
replace it with [newIndent].\n *\n * @param marginPrefix non-blank string, which is used as a margin delimiter.
Default is `|` (pipe character).\n */\npublic fun String.replaceIndentByMargin(newIndent: String = "|",
marginPrefix: String = "|"): String {\n    require(marginPrefix.isNotBlank()) { "marginPrefix must be non-blank
string." }\n    val lines = lines()\n    return lines.reindent(length + newIndent.length * lines.size,
getIndentFunction(newIndent), { line ->\n        val firstNonWhitespaceIndex = line.indexOfFirst { !it.isWhitespace()
}\n        when {\n            firstNonWhitespaceIndex == -1 -> null\n            line.startsWith(marginPrefix,
firstNonWhitespaceIndex) -> line.substring(firstNonWhitespaceIndex + marginPrefix.length)\n            else -> null\n
        }\n    })\n}\n\n/**\n * Detects a common minimal indent of all the input lines, removes it from every line and
also removes the first and the last\n * lines if they are blank (notice difference blank vs empty).\n *\n * Note that
blank lines do not affect the detected indent level.\n *\n * In case if there are non-blank lines with no leading
whitespace characters (no indent at all) then the\n * common indent is 0, and therefore this function doesn't change
the indentation.\n *\n * Doesn't preserve the original line endings.\n *\n * @sample
samples.text.Strings.trimIndent\n * @see trimMargin\n * @see kotlin.text.isBlank\n */\npublic fun
String.trimIndent(): String = replaceIndent("|")\n\n/**\n * Detects a common minimal indent like it does
[trimIndent] and replaces it with the specified [newIndent].\n */\npublic fun String.replaceIndent(newIndent: String
= "|"): String {\n    val lines = lines()\n    val minCommonIndent = lines\n        .filter(String::isNotBlank)\n
        .map(String::indentWidth)\n        .min() ?: 0\n    return lines.reindent(length + newIndent.length * lines.size,
getIndentFunction(newIndent), { line -> line.drop(minCommonIndent) })\n}\n\n/**\n * Prepends [indent] to every
line of the original string.\n *\n * Doesn't preserve the original line endings.\n */\npublic fun
String.prependIndent(indent: String = " |"): String =\n    lineSequence()\n        .map {\n            when {\n
                it.isBlank() -> {\n                    when {\n                        it.length < indent.length -> indent\n
                        else -> it\n                    }\n                }\n            }\n        }\n        .joinToString("\n")\n\nprivate fun
String.indentWidth(): Int = indexOfFirst { !it.isWhitespace() }.let { if (it == -1) length else it }\n\nprivate fun
getIndentFunction(indent: String) = when {\n    indent.isEmpty() -> { line: String -> line }\n    else -> { line: String -
> indent + line }\n}\n\nprivate inline fun List<String>.reindent(\n    resultSizeEstimate: Int,\n    indentAddFunction:
(String) -> String,\n    indentCutFunction: (String) -> String?): String {\n    val lastIndex = lastIndex\n    return
mapIndexedNotNull { index, value ->\n        if ((index == 0 || index == lastIndex) && value.isBlank())\n            null\n        else\n            indentCutFunction(value)?.let(indentAddFunction)?: value\n    }\n
}\n\njoinTo(StringBuilder(resultSizeEstimate), "\n")\n    .toString()\n}\n", "/*\n * Copyright 2010-2018 JetBrains
s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0
license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.text\n\n/**\n * Defines names for
Unicode symbols used in proper Typography.\n */\npublic object Typography {\n    /** The character &#x22;
\u2013 quotation mark */\n    public const val quote: Char = "\u0022" // ** The character &#x24; \u2013 dollar
sign */\n    public const val dollar: Char = "\u0024" // ** The character &#x26; \u2013 ampersand */\n    public
const val amp: Char = "\u0026" // ** The character &#x3C; \u2013 less-than sign */\n    public const val less:
Char = "\u003C" // ** The character &#x3E; \u2013 greater-than sign */\n    public const val greater: Char =

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\u003E\n /** The non-breaking space character */\n public const val nbsp: Char = "\u00A0"\n /** The
character &#xD7; */\n public const val times: Char = "\u00D7"\n /** The character &#xA2; */\n public const
val cent: Char = "\u00A2"\n /** The character &#xA3; */\n public const val pound: Char = "\u00A3"\n /** The
character &#xA7; */\n public const val section: Char = "\u00A7"\n /** The character &#xA9; */\n public const
val copyright: Char = "\u00A9"\n /** The character &#xAB; */\n public const val leftGuillemete: Char =
"\u00AB"\n /** The character &#xBB; */\n public const val rightGuillemete: Char = "\u00BB"\n /** The
character &#xAE; */\n public const val registered: Char = "\u00AE"\n /** The character &#xB0; */\n public
const val degree: Char = "\u00B0"\n /** The character &#xB1; */\n public const val plusMinus: Char =
"\u00B1"\n /** The character &#xB6; */\n public const val paragraph: Char = "\u00B6"\n /** The character
&#xB7; */\n public const val middleDot: Char = "\u00B7"\n /** The character &#xBD; */\n public const val
half: Char = "\u00BD"\n /** The character &#x2013; */\n public const val ndash: Char = "\u2013"\n /** The
character &#x2014; */\n public const val mdash: Char = "\u2014"\n /** The character &#x2018; */\n public
const val leftSingleQuote: Char = "\u2018"\n /** The character &#x2019; */\n public const val rightSingleQuote:
Char = "\u2019"\n /** The character &#x201A; */\n public const val lowSingleQuote: Char = "\u201A"\n /**
The character &#x201C; */\n public const val leftDoubleQuote: Char = "\u201C"\n /** The character &#x201D;
*/\n public const val rightDoubleQuote: Char = "\u201D"\n /** The character &#x201E; */\n public const val
lowDoubleQuote: Char = "\u201E"\n /** The character &#x2020; */\n public const val dagger: Char =
"\u2020"\n /** The character &#x2021; */\n public const val doubleDagger: Char = "\u2021"\n /** The
character &#x2022; */\n public const val bullet: Char = "\u2022"\n /** The character &#x2026; */\n public
const val ellipsis: Char = "\u2026"\n /** The character &#x2032; */\n public const val prime: Char = "\u2032"\n
/** The character &#x2033; */\n public const val doublePrime: Char = "\u2033"\n /** The character &#x20AC;
*/\n public const val euro: Char = "\u20AC"\n /** The character &#x2122; */\n public const val tm: Char =
"\u2122"\n /** The character &#x2248; */\n public const val almostEqual: Char = "\u2248"\n /** The character
&#x2260; */\n public const val notEqual: Char = "\u2260"\n /** The character &#x2264; */\n public const val
lessOrEqual: Char = "\u2264"\n /** The character &#x2265; */\n public const val greaterOrEqual: Char =
"\u2265"\n}"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use
of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*/\n\npackage kotlin.text\n\n/**\n * Represents a collection of captured groups in a single match of a regular
expression.\n *\n * This collection has size of `groupCount + 1` where `groupCount` is the count of groups in the
regular expression.\n *\n * Groups are indexed from 1 to `groupCount` and group with the index 0 corresponds to the
entire match.\n *\n * An element of the collection at the particular index can be `null` if the corresponding
group in the regular expression is optional and\n * there was no match captured by that group.\n */\n\npublic interface
MatchGroupCollection : Collection<MatchGroup?> {\n\n /** Returns a group with the specified [index].\n *\n * @return An instance of [MatchGroup] if the group with the specified [index] was matched or `null` otherwise.\n
*\n * Groups are indexed from 1 to the count of groups in the regular expression. A group with the index 0\n *
corresponds to the entire match.\n */\n\n public operator fun get(index: Int): MatchGroup?\n}\n\n/**\n * Extends
[MatchGroupCollection] by introducing a way to get matched groups by name, when regex supports it.\n
*/\n\n@SinceKotlin("1.1")\npublic interface MatchNamedGroupCollection : MatchGroupCollection {\n\n /**\n * Returns a named group with the specified [name].\n *\n * @return An instance of [MatchGroup] if the group with the
specified [name] was matched or `null` otherwise.\n *\n * @throws IllegalArgumentException if there is no group
with the specified [name] defined in the regex pattern.\n *\n * @throws UnsupportedOperationException if getting
named groups isn't supported on the current platform.\n */\n\n public operator fun get(name: String):
MatchGroup?\n}\n\n/**\n * Represents the results from a single regular expression match.\n */\n\npublic interface
MatchResult {\n\n /** The range of indices in the original string where match was captured. */\n\n public val range:
IntRange\n\n /** The substring from the input string captured by this match. */\n\n public val value: String\n\n /**\n * A collection of groups matched by the regular expression.\n *\n * This collection has size of `groupCount +
1` where `groupCount` is the count of groups in the regular expression.\n *\n * Groups are indexed from 1 to
`groupCount` and group with the index 0 corresponds to the entire match.\n */\n\n public val groups:

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MatchGroupCollection\n /**\n * A list of matched indexed group values.\n *\n * This list has size of
`groupCount + 1` where `groupCount` is the count of groups in the regular expression.\n * Groups are indexed
from 1 to `groupCount` and group with the index 0 corresponds to the entire match.\n *\n * If the group in the
regular expression is optional and there were no match captured by that group,\n * corresponding item in
[groupValues] is an empty string.\n *\n * @sample
samples.text.Regexps.matchDestructuringToGroupValues\n *\n public val groupValues: List<String>\n\n
/**\n * An instance of [MatchResult.Destructured] wrapper providing components for destructuring assignment
of group values.\n *\n * component1 corresponds to the value of the first group, component2 \u2014 of the
second, and so on.\n *\n * @sample samples.text.Regexps.matchDestructuringToGroupValues\n *\n
public val destructured: Destructured get() = Destructured(this)\n\n /** Returns a new [MatchResult] with the
results for the next match, starting at the position\n * at which the last match ended (at the character after the last
matched character).\n *\n public fun next(): MatchResult?\n\n /**\n * Provides components for
destructuring assignment of group values.\n *\n * [component1] corresponds to the value of the first group,
[component2] \u2014 of the second, and so on.\n *\n * If the group in the regular expression is optional and
there were no match captured by that group,\n * corresponding component value is an empty string.\n *\n *
@sample samples.text.Regexps.matchDestructuringToGroupValues\n *\n public class Destructured internal
constructor(public val match: MatchResult) {\n @kotlin.internal.InlineOnly\n public operator inline fun
component1(): String = match.groupValues[1]\n @kotlin.internal.InlineOnly\n public operator inline fun
component2(): String = match.groupValues[2]\n @kotlin.internal.InlineOnly\n public operator inline fun
component3(): String = match.groupValues[3]\n @kotlin.internal.InlineOnly\n public operator inline fun
component4(): String = match.groupValues[4]\n @kotlin.internal.InlineOnly\n public operator inline fun
component5(): String = match.groupValues[5]\n @kotlin.internal.InlineOnly\n public operator inline fun
component6(): String = match.groupValues[6]\n @kotlin.internal.InlineOnly\n public operator inline fun
component7(): String = match.groupValues[7]\n @kotlin.internal.InlineOnly\n public operator inline fun
component8(): String = match.groupValues[8]\n @kotlin.internal.InlineOnly\n public operator inline fun
component9(): String = match.groupValues[9]\n @kotlin.internal.InlineOnly\n public operator inline fun
component10(): String = match.groupValues[10]\n\n /**\n * Returns destructured group values as a list of
strings.\n * First value in the returned list corresponds to the value of the first group, and so on.\n *\n
* @sample samples.text.Regexps.matchDestructuringToGroupValues\n *\n public fun toList():
List<String> = match.groupValues.subList(1, match.groupValues.size)\n }\n}"/*\n * Copyright 2010-2019
JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the
Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.time\n\nimport
kotlin.math.abs\n\n@UseExperimental(ExperimentalTime::class)\nprivate inline val storageUnit get() =
DurationUnit.NANOSECONDS\n\n/**\n * Represents the amount of time one instant of time is away from another
instant.\n *\n * A negative duration is possible in a situation when the second instant is earlier than the first one.\n *
An infinite duration value [Duration.INFINITE] can be used to represent infinite timeouts.\n *\n * To construct a
duration use either the extension function [toDuration],\n * or the extension properties [hours], [minutes], [seconds],
and so on,\n * available on [Int], [Long], and [Double] numeric types.\n *\n * To get the value of this duration
expressed in a particular [duration units][DurationUnit]\n * use the functions [toInt], [toLong], and [toDouble]\n * or
the properties [inHours], [inMinutes], [inSeconds], [inNanoseconds], and so on.\n\n
*/\n\n@SinceKotlin("1.3")\n@ExperimentalTime\n@Suppress("NON_PUBLIC_PRIMARY_CONSTRUCTOR_O
F_INLINE_CLASS")\npublic inline class Duration internal constructor(internal val value: Double) :
Comparable<Duration> {\n// TODO: backend fails on init block, wait for KT-28055\n// init {\n//
require(_value.isNaN().not())\n// }\n\n companion object {\n /** The duration equal to exactly 0 seconds.
*\n public val ZERO: Duration = Duration(0.0)\n /** The duration whose value is positive infinity. It is
useful for representing timeouts that should never expire. *\n public val INFINITE: Duration =
Duration(Double.POSITIVE_INFINITY)\n\n /** Converts the given time duration [value] expressed in the
specified [sourceUnit] into the specified [targetUnit]. *\n public fun convert(value: Double, sourceUnit:

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DurationUnit, targetUnit: DurationUnit): Double = \n      convertDurationUnit(value, sourceUnit, targetUnit)\n
}\n\n // arithmetic operators\n\n /** Returns the negative of this value. */\n public operator fun unaryMinus():
Duration = Duration(-value)\n\n /** Returns a duration whose value is the sum of this and [other] duration values.
*/\n public operator fun plus(other: Duration): Duration = Duration(value + other.value)\n\n /** Returns a
duration whose value is the difference between this and [other] duration values. */\n public operator fun
minus(other: Duration): Duration = Duration(value - other.value)\n\n /** Returns a duration whose value is this
duration value multiplied by the given [scale] number. */\n public operator fun times(scale: Int): Duration =
Duration(value * scale)\n\n /** Returns a duration whose value is this duration value multiplied by the given
[scale] number. */\n public operator fun times(scale: Double): Duration = Duration(value * scale)\n\n /**
Returns a duration whose value is this duration value divided by the given [scale] number. */\n public operator fun
div(scale: Int): Duration = Duration(value / scale)\n\n /** Returns a duration whose value is this duration value
divided by the given [scale] number. */\n public operator fun div(scale: Double): Duration = Duration(value /
scale)\n\n /** Returns a number that is the ratio of this and [other] duration values. */\n public operator fun
div(other: Duration): Double = this.value / other.value\n\n /** Returns true, if the duration value is less than zero.
*/\n public fun isNegative(): Boolean = value < 0\n\n /** Returns true, if the duration value is greater than zero.
*/\n public fun isPositive(): Boolean = value > 0\n\n /** Returns true, if the duration value is infinite. */\n
public fun isInfinite(): Boolean = value.isInfinite()\n\n /** Returns true, if the duration value is finite. */\n public
fun isFinite(): Boolean = value.isFinite()\n\n /** Returns the absolute value of this value. The returned value is
always non-negative. */\n public val absoluteValue: Duration get() = if (isNegative()) -this else this\n\n override
fun compareTo(other: Duration): Int = this.value.compareTo(other.value)\n\n\n // splitting to components\n\n
/**\n * Splits this duration into days, hours, minutes, seconds, and nanoseconds and executes the given [action]
with these components.\n * The result of [action] is returned as the result of this function.\n * \n * -
`nanoseconds` represents the whole number of nanoseconds in this duration, and its absolute value is less than
1_000_000_000;\n * - `seconds` represents the whole number of seconds in this duration, and its absolute value is
less than 60;\n * - `minutes` represents the whole number of minutes in this duration, and its absolute value is less
than 60;\n * - `hours` represents the whole number of hours in this duration, and its absolute value is less than
24;\n * - `days` represents the whole number of days in this duration.\n * If the value doesn't fit in [Int] range,
i.e. it's greater than [Int.MAX_VALUE] or less than [Int.MIN_VALUE],\n * it is coerced into that range.\n
*/\n public inline fun <T> toComponents(action: (days: Int, hours: Int, minutes: Int, seconds: Int, nanoseconds:
Int) -> T): T = \n      action(inDays.toInt(), hoursComponent, minutesComponent, secondsComponent,
nanosecondsComponent)\n\n /**\n * Splits this duration into hours, minutes, seconds, and nanoseconds and
executes the given [action] with these components.\n * The result of [action] is returned as the result of this
function.\n * \n * - `nanoseconds` represents the whole number of nanoseconds in this duration, and its absolute
value is less than 1_000_000_000;\n * - `seconds` represents the whole number of seconds in this duration, and its
absolute value is less than 60;\n * - `minutes` represents the whole number of minutes in this duration, and its
absolute value is less than 60;\n * - `hours` represents the whole number of hours in this duration.\n * If the
value doesn't fit in [Int] range, i.e. it's greater than [Int.MAX_VALUE] or less than [Int.MIN_VALUE],\n * it is
coerced into that range.\n */\n public inline fun <T> toComponents(action: (hours: Int, minutes: Int, seconds:
Int, nanoseconds: Int) -> T): T = \n      action(inHours.toInt(), minutesComponent, secondsComponent,
nanosecondsComponent)\n\n /**\n * Splits this duration into minutes, seconds, and nanoseconds and executes
the given [action] with these components.\n * The result of [action] is returned as the result of this function.\n
*\n * - `nanoseconds` represents the whole number of nanoseconds in this duration, and its absolute value is less
than 1_000_000_000;\n * - `seconds` represents the whole number of seconds in this duration, and its absolute
value is less than 60;\n * - `minutes` represents the whole number of minutes in this duration.\n * If the value
doesn't fit in [Int] range, i.e. it's greater than [Int.MAX_VALUE] or less than [Int.MIN_VALUE],\n * it is
coerced into that range.\n */\n public inline fun <T> toComponents(action: (minutes: Int, seconds: Int,
nanoseconds: Int) -> T): T = \n      action(inMinutes.toInt(), secondsComponent, nanosecondsComponent)\n\n
/**\n * Splits this duration into seconds, and nanoseconds and executes the given [action] with these

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components.\n * The result of [action] is returned as the result of this function.\n * \n * - `nanoseconds`
represents the whole number of nanoseconds in this duration, and its absolute value is less than 1_000_000_000;\n
* - `seconds` represents the whole number of seconds in this duration.\n * If the value doesn't fit in [Long] range,
i.e. it's greater than [Long.MAX_VALUE] or less than [Long.MIN_VALUE],\n * it is coerced into that range.\n
*\n public inline fun <T> toComponents(action: (seconds: Long, nanoseconds: Int) -> T): T =\n
action(inSeconds.toLong(), nanosecondsComponent)\n\n @PublishedApi\n internal val hoursComponent: Int
get() = (inHours % 24).toInt()\n @PublishedApi\n internal val minutesComponent: Int get() = (inMinutes %
60).toInt()\n @PublishedApi\n internal val secondsComponent: Int get() = (inSeconds % 60).toInt()\n
@PublishedApi\n internal val nanosecondsComponent: Int get() = (inNanoseconds % 1e9).toInt()\n\n //
conversion to units\n\n /** Returns the value of this duration expressed as a [Double] number of the specified
[unit]. */\n public fun toDouble(unit: DurationUnit): Double = convertDurationUnit(value, storageUnit, unit)\n\n
/**\n * Returns the value of this duration expressed as a [Long] number of the specified [unit].\n * \n * If the
value doesn't fit in the range of [Long] type, it is coerced into that range, see the conversion [Double.toLong] for
details.\n */\n public fun toLong(unit: DurationUnit): Long = toDouble(unit).toLong()\n\n /**\n * Returns
the value of this duration expressed as an [Int] number of the specified [unit].\n * \n * If the value doesn't fit in
the range of [Int] type, it is coerced into that range, see the conversion [Double.toInt] for details.\n */\n public
fun toInt(unit: DurationUnit): Int = toDouble(unit).toInt()\n\n /** The value of this duration expressed as a
[Double] number of days. */\n public val inDays: Double get() = toDouble(DurationUnit.DAYS)\n\n /** The
value of this duration expressed as a [Double] number of hours. */\n public val inHours: Double get() =
toDouble(DurationUnit.HOURS)\n\n /** The value of this duration expressed as a [Double] number of minutes.
*/\n public val inMinutes: Double get() = toDouble(DurationUnit.MINUTES)\n\n /** The value of this duration
expressed as a [Double] number of seconds. */\n public val inSeconds: Double get() =
toDouble(DurationUnit.SECONDS)\n\n /** The value of this duration expressed as a [Double] number of
milliseconds. */\n public val inMilliseconds: Double get() = toDouble(DurationUnit.MILLISECONDS)\n\n /**
The value of this duration expressed as a [Double] number of microseconds. */\n public val inMicroseconds:
Double get() = toDouble(DurationUnit.MICROSECONDS)\n\n /** The value of this duration expressed as a
[Double] number of nanoseconds. */\n public val inNanoseconds: Double get() =
toDouble(DurationUnit.NANOSECONDS)\n\n // shortcuts\n\n /**\n * Returns the value of this duration
expressed as a [Long] number of nanoseconds.\n * \n * If the value doesn't fit in the range of [Long] type, it is
coerced into that range, see the conversion [Double.toLong] for details.\n * \n * The range of durations that can
be expressed as a `Long` number of nanoseconds is approximately \u00b1292 years.\n */\n public fun
toLongNanoseconds(): Long = toLong(DurationUnit.NANOSECONDS)\n\n /**\n * Returns the value of this
duration expressed as a [Long] number of milliseconds.\n * \n * The value is coerced to the range of [Long]
type, if it doesn't fit in that range, see the conversion [Double.toLong] for details.\n * \n * The range of
durations that can be expressed as a `Long` number of milliseconds is approximately \u00b1292 million years.\n
*/\n public fun toLongMilliseconds(): Long = toLong(DurationUnit.MILLISECONDS)\n\n /**\n * Returns a
string representation of this duration value expressed in the unit which yields the most compact and readable number
value.\n * \n * Special cases:\n * - zero duration is formatted as `0s`\n * - the infinite duration is
formatted as `Infinity` without unit\n * - very small durations (less than 1e-15 s) are expressed in seconds and
formatted in scientific notation\n * - very big durations (more than 1e+7 days) are expressed in days and
formatted in scientific notation\n * \n * @return the value of duration in the automatically determined unit
followed by that unit abbreviated name: `d`, `h`, `m`, `s`, `ms`, `us`, or `ns`.\n * \n * @sample
samples.time.Durations.toStringDefault\n */\n override fun toString(): String = when {\n isInfinite() ->
value.toString()\n value == 0.0 -> "0s"\n else -> {\n val absNs = absoluteValue.inNanoseconds\n
var scientific = false\n var maxDecimals = 0\n val unit = when {\n absNs < 1e-6 ->
DurationUnit.SECONDS.also { scientific = true }\n absNs < 1 -> DurationUnit.NANOSECONDS.also {
maxDecimals = 7 }\n absNs < 1e3 -> DurationUnit.NANOSECONDS\n absNs < 1e6 ->
DurationUnit.MICROSECONDS\n absNs < 1e9 -> DurationUnit.MILLISECONDS\n absNs <

```

```

1000e9 -> DurationUnit.SECONDS\n
3600_000e9 -> DurationUnit.HOURS\n
DurationUnit.DAYS.also { scientific = true }\n
scientific -> formatScientific(value)\n
maxDecimals > 0 -> formatUpToDecimals(value,
maxDecimals)\n
else -> formatToExactDecimals(value, precision(abs(value)))\n
unit.shortName()\n
private fun precision(value: Double): Int = when {\n
value < 1 -> 3\n
value < 10 -> 2\n
value < 100 -> 1\n
else -> 0\n
}/**\n
 * Returns a string representation of this
duration value expressed in the given [unit]\n
 * and formatted with the specified [decimals] number of digits after
decimal point.\n
 * Special cases:\n
 * - the infinite duration is formatted as `\"Infinity\"` without unit\n
 * @return the value of duration in the specified [unit] followed by that unit abbreviated name: `d`, `h`, `m`,
`s`, `ms`, `us`, or `ns`.\n
 * @throws IllegalArgumentException if [decimals] is less than zero.\n
 * @sample samples.time.Durations.toStringDecimals\n
 * public fun toString(unit: DurationUnit, decimals: Int
= 0): String {\n
require(decimals >= 0) { \"decimals must be not negative, but was $decimals\" }\n
if
(isInfinite()) return value.toString()\n
val number = toDouble(unit)\n
return when {\n
abs(number) <
1e14 -> formatToExactDecimals(number, decimals.coerceAtMost(12))\n
else -> formatScientific(number)\n
} + unit.shortName()\n
}/**\n
 * Returns an ISO-8601 based string representation of this duration.\n
 * The returned value is presented in the format `PThHmMs.fS`, where `h`, `m`, `s` are the integer components
of this duration (see [toComponents])\n
 * and `f` is a fractional part of second. Depending on the roundness of the
value the fractional part can be formatted with either\n
 * 0, 3, 6, or 9 decimal digits.\n
 * If the hours
component absolute value of this duration is greater than [Int.MAX_VALUE], it is replaced with
[Int.MAX_VALUE],\n
 * so the infinite duration is formatted as `\"PT2147483647H\"`.\n
 * Negative
durations are indicated with the sign `-` in the beginning of the returned string, for example, `\"-PT5M30S\"`.\n
 * @sample samples.time.Durations.toIsoString\n
 * @UseExperimental(ExperimentalStdlibApi::class)\n
public fun toIsoString(): String = buildString {\n
if
(isNegative()) append('-')\n
append(\"PT\")\n
absoluteValue.toComponents { hours, minutes, seconds,
nanoseconds -> \n
val hasHours = hours != 0\n
val hasSeconds = seconds != 0 || nanoseconds != 0\n
val hasMinutes = minutes != 0 || (hasSeconds && hasHours)\n
if (hasHours) {\n
append(hours).append('H')\n
}\n
if (hasMinutes) {\n
append(minutes).append('M')\n
}\n
if (hasSeconds || (!hasHours && !hasMinutes)) {\n
append(seconds)\n
if (nanoseconds
!= 0) {\n
append('.')\n
val nss = nanoseconds.toString().padStart(9, '0')\n
when
{\n
nanoseconds % 1_000_000 == 0 -> appendRange(nss, 0, 3)\n
nanoseconds %
1_000 == 0 -> appendRange(nss, 0, 6)\n
else -> append(nss)\n
}\n
}\n
append('S')\n
}\n
}\n
}\n
}/**\n
 * Returns a [Duration] equal to this [Int] number of the specified [unit].
*\n
 * @SinceKotlin(\"1.3\")\n
 * @ExperimentalTime\n
 * public fun Int.toDuration(unit: DurationUnit): Duration =
toDouble().toDuration(unit)\n
 * Returns a [Duration] equal to this [Long] number of the specified [unit].
*\n
 * @SinceKotlin(\"1.3\")\n
 * @ExperimentalTime\n
 * public fun Long.toDuration(unit: DurationUnit): Duration =
toDouble().toDuration(unit)\n
 * Returns a [Duration] equal to this [Double] number of the specified [unit].
*\n
 * @SinceKotlin(\"1.3\")\n
 * @ExperimentalTime\n
 * public fun Double.toDuration(unit: DurationUnit): Duration =
Duration(convertDurationUnit(this, unit, storageUnit))\n
 * Returns a [Duration] equal to this [Int] number of nanoseconds.
*\n
 * @SinceKotlin(\"1.3\")\n
 * @ExperimentalTime\n
 * public val Int.nanoseconds get() =
toDuration(DurationUnit.NANOSECONDS)\n
 * Returns a [Duration] equal to this [Long] number of
nanoseconds. *\n
 * @SinceKotlin(\"1.3\")\n
 * @ExperimentalTime\n
 * public val Long.nanoseconds get() =
toDuration(DurationUnit.NANOSECONDS)\n
 * Returns a [Duration] equal to this [Double] number of
nanoseconds. *\n
 * @SinceKotlin(\"1.3\")\n
 * @ExperimentalTime\n
 * public val Double.nanoseconds get() =
toDuration(DurationUnit.NANOSECONDS)\n
 * Returns a [Duration] equal to this [Int] number of
microseconds. *\n
 * @SinceKotlin(\"1.3\")\n
 * @ExperimentalTime\n
 * public val Int.microseconds get() =

```

`toDuration(DurationUnit.MICROSECONDS)`\n\n/\*\* Returns a [Duration] equal to this [Long] number of microseconds.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Long.microseconds get() =`
  
`toDuration(DurationUnit.MICROSECONDS)`\n\n/\*\* Returns a [Duration] equal to this [Double] number of microseconds.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Double.microseconds get() =`
  
`toDuration(DurationUnit.MICROSECONDS)`\n\n/\*\* Returns a [Duration] equal to this [Int] number of milliseconds.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Int.milliseconds get() =`
  
`toDuration(DurationUnit.MILLISECONDS)`\n\n/\*\* Returns a [Duration] equal to this [Long] number of milliseconds.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Long.milliseconds get() =`
  
`toDuration(DurationUnit.MILLISECONDS)`\n\n/\*\* Returns a [Duration] equal to this [Double] number of milliseconds.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Double.milliseconds get() =`
  
`toDuration(DurationUnit.MILLISECONDS)`\n\n/\*\* Returns a [Duration] equal to this [Int] number of seconds.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Int.seconds get() =`
  
`toDuration(DurationUnit.SECONDS)`\n\n/\*\* Returns a [Duration] equal to this [Long] number of seconds.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Long.seconds get() =`
  
`toDuration(DurationUnit.SECONDS)`\n\n/\*\* Returns a [Duration] equal to this [Double] number of seconds.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Double.seconds get() =`
  
`toDuration(DurationUnit.SECONDS)`\n\n/\*\* Returns a [Duration] equal to this [Int] number of minutes.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Int.minutes get() =`
  
`toDuration(DurationUnit.MINUTES)`\n\n/\*\* Returns a [Duration] equal to this [Long] number of minutes.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Long.minutes get() =`
  
`toDuration(DurationUnit.MINUTES)`\n\n/\*\* Returns a [Duration] equal to this [Double] number of minutes.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Double.minutes get() =`
  
`toDuration(DurationUnit.MINUTES)`\n\n/\*\* Returns a [Duration] equal to this [Int] number of hours.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Int.hours get() =`
  
`toDuration(DurationUnit.HOURS)`\n\n/\*\* Returns a [Duration] equal to this [Long] number of hours.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Long.hours get() =`
  
`toDuration(DurationUnit.HOURS)`\n\n/\*\* Returns a [Duration] equal to this [Double] number of hours.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Double.hours get() =`
  
`toDuration(DurationUnit.HOURS)`\n\n/\*\* Returns a [Duration] equal to this [Int] number of days.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Int.days get() =`
  
`toDuration(DurationUnit.DAYS)`\n\n/\*\* Returns a [Duration] equal to this [Long] number of days.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Long.days get() =`
  
`toDuration(DurationUnit.DAYS)`\n\n/\*\* Returns a [Duration] equal to this [Double] number of days.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic val Double.days get() =`
  
`toDuration(DurationUnit.DAYS)`\n\n/\*\* Returns a duration whose value is the specified [duration] value multiplied by this number.
   
`*\n@SinceKotlin("1.3")\n@ExperimentalTime\n@kotlin.internal.InlineOnly\npublic inline operator fun Int.times(duration: Duration): Duration = duration * this\n\n/** Returns a duration whose value is the specified [duration] value multiplied by this number.
   
*\n@SinceKotlin("1.3")\n@ExperimentalTime\n@kotlin.internal.InlineOnly\npublic inline operator fun Double.times(duration: Duration): Duration = duration * this\n\n\ninternal expect fun formatToExactDecimals(value: Double, decimals: Int): String\n\ninternal expect fun formatUpToDecimals(value: Double, decimals: Int): String\n\ninternal expect fun formatScientific(value: Double): String", "/*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n\n\n*\n@file:kotlin.jvm.JvmMultifileClass()\n@file:kotlin.jvm.JvmName("DurationUnitKt")\n\npackage kotlin.time\n\n\n/**\n * The list of possible time measurement units, in which a duration can be expressed.\n *\n * The smallest time unit is [NANOSECONDS] and the largest is [DAYS], which corresponds to exactly 24 [HOURS].\n *\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic expect enum class DurationUnit {\n */*\n`

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* Time unit representing one nanosecond, which is 1/1000 of a microsecond.\n    *\n    NANOSECONDS,\n    /**\n    * Time unit representing one microsecond, which is 1/1000 of a millisecond.\n    *\n    MICROSECONDS,\n    /**\n    * Time unit representing one millisecond, which is 1/1000 of a second.\n    *\n    MILLISECONDS,\n    /**\n    * Time unit representing one second.\n    *\n    SECONDS,\n    /**\n    * Time unit representing one minute.\n    *\n    MINUTES,\n    /**\n    * Time unit representing one hour.\n    *\n    HOURS,\n    /**\n    * Time unit representing one day, which is always equal to 24 hours.\n    *\n    DAYS;\n}\n\n/** Converts the given time duration [value] expressed in the specified [sourceUnit] into the specified [targetUnit]. *\n@SinceKotlin("1.3")\n@ExperimentalTime\ninternal expect fun convertDurationUnit(value: Double, sourceUnit: DurationUnit, targetUnit: DurationUnit): Double\n\n@SinceKotlin("1.3")\n@ExperimentalTime\ninternal fun DurationUnit.shortName(): String = when (this) {\n    DurationUnit.NANOSECONDS -> "ns"\n    DurationUnit.MICROSECONDS -> "us"\n    DurationUnit.MILLISECONDS -> "ms"\n    DurationUnit.SECONDS -> "s"\n    DurationUnit.MINUTES -> "m"\n    DurationUnit.HOURS -> "h"\n    DurationUnit.DAYS -> "d"}\n\n/* Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.time\n\nimport kotlin.annotation.AnnotationTarget.*\n\n/** This annotation marks the experimental preview of the standard library API for measuring time and working with durations.\n * \n * > Note that this API is in a preview state and has a very high chance of being changed in the future.\n * Do not use it if you develop a library since your library will become binary incompatible\n * with the future versions of the standard library.\n * Any usage of a declaration annotated with `@ExperimentalTime` must be accepted either by\n * annotating that usage with the [OptIn] annotation, e.g. `@OptIn(ExperimentalTime::class)`,\n * or by using the compiler argument `-Xopt-in=kotlin.time.ExperimentalTime`.\n */\n@Suppress("DEPRECATION")\n@Experimental(level = Experimental.Level.ERROR)\n@RequiresOptIn(level = RequiresOptIn.Level.ERROR)\n@MustBeDocumented\n@Retention(AnnotationRetention.BINARY)\n@Target(\n    CLASS,\n    ANNOTATION_CLASS,\n    PROPERTY,\n    FIELD,\n    LOCAL_VARIABLE,\n    VALUE_PARAMETER,\n    CONSTRUCTOR,\n    FUNCTION,\n    PROPERTY_GETTER,\n    PROPERTY_SETTER,\n    TYPEALIAS)\n@SinceKotlin("1.3")\npublic annotation class ExperimentalTime\n\n/* Copyright 2010-2020 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin.time\n\n/** A source of time for measuring time intervals.\n * \n * The only operation provided by the time source is [markNow]. It returns a [TimeMark], which can be used to query the elapsed time later.\n * \n * @see [measureTime]\n * @see [measureTimedValue]\n */\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic interface TimeSource {\n    /** Marks a point in time on this time source.\n     * \n     * The returned [TimeMark] instance encapsulates the captured time point and allows querying\n     * the duration of time interval [elapsed][TimeMark.elapsedNow] from that point.\n     */\n    public fun markNow(): TimeMark\n\n    /** The most precise time source available in the platform.\n     * \n     * This time source returns its readings from a source of monotonic time when it is available in a target platform,\n     * and resorts to a non-monotonic time source otherwise.\n     */\n    public object Monotonic : TimeSource by MonotonicTimeSource {\n        override fun toString(): String = MonotonicTimeSource.toString()\n    }\n\n    public companion object {\n        /** Represents a time point notched on a particular [TimeSource].\n         * \n         * Remains bound to the time source it was taken from\n         * and allows querying for the duration of time elapsed from that point (see the function [elapsedNow]).\n         */\n        @SinceKotlin("1.3")\n        @ExperimentalTime\n        public abstract class TimeMark {\n            /** Returns the amount of time passed from this mark measured with the time source from which this mark was taken.\n             * \n             * Note that the value returned by this function can change on subsequent invocations.\n             */\n            public abstract fun elapsedNow(): Duration\n\n            /** Returns a time mark on the same time source that is ahead of this time mark by the specified [duration].\n             * \n             * The returned time mark is more _late_ when the [duration] is positive, and more _early_ when the [duration] is negative.\n             */\n            public open operator fun plus(duration: Duration): TimeMark = AdjustedTimeMark(this, duration)\n\n            /** Returns a

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time mark on the same time source that is behind this time mark by the specified [duration].\n    *\n    * The
returned time mark is more _early_ when the [duration] is positive, and more _late_ when the [duration] is
negative.\n    */\n    public open operator fun minus(duration: Duration): TimeMark = plus(-duration)\n\n\n    /**\n    * Returns true if this time mark has passed according to the time source from which this mark was taken.\n    *\n    * Note that the value returned by this function can change on subsequent invocations.\n    * If the time source is
monotonic, it can change only from `false` to `true`, namely, when the time mark becomes behind the current point
of the time source.\n    */\n    public fun hasPassedNow(): Boolean = !elapsedNow().isNegative()\n\n\n    /**\n    * Returns false if this time mark has not passed according to the time source from which this mark was taken.\n    *\n    * Note that the value returned by this function can change on subsequent invocations.\n    * If the time source is
monotonic, it can change only from `true` to `false`, namely, when the time mark becomes behind the current point
of the time source.\n    */\n    public fun hasNotPassedNow(): Boolean =
elapsedNow().isNegative()\n}\n\n\n@ExperimentalTime\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\n@
Deprecated(\n    \ "Subtracting one TimeMark from another is not a well defined operation because these time marks
could have been obtained from the different time sources.",\n    level = DeprecationLevel.ERROR)\n\npublic inline
operator fun TimeMark.minus(other: TimeMark): Duration = throw Error(\ "Operation is
disallowed.")\n\n\n@ExperimentalTime\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\n@Deprecated(\n
\ "Comparing one TimeMark to another is not a well defined operation because these time marks could have been
obtained from the different time sources.",\n    level = DeprecationLevel.ERROR)\n\npublic inline operator fun
TimeMark.compareTo(other: TimeMark): Int = throw Error(\ "Operation is
disallowed.")\n\n\n@ExperimentalTime\nprivate class AdjustedTimeMark(val mark: TimeMark, val adjustment:
Duration) : TimeMark() {\n    override fun elapsedNow(): Duration = mark.elapsedNow() - adjustment\n\n
    override fun plus(duration: Duration): TimeMark = AdjustedTimeMark(mark, adjustment +
duration)\n}\n\n\n@SinceKotlin("1.3")\n@ExperimentalTime\n@Deprecated(\ "Use TimeSource interface
instead.", ReplaceWith("TimeSource", "kotlin.time.TimeSource"))\npublic typealias Clock =
TimeSource\n\n\n@SinceKotlin("1.3")\n@ExperimentalTime\n@Deprecated(\ "Use TimeMark class instead.",
ReplaceWith("TimeMark", "kotlin.time.TimeMark"))\npublic typealias ClockMark = TimeMark\n\n\n */\n\n
Copyright 2010-2020 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is
governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage
kotlin.time\n\n\n@SinceKotlin("1.3")\n@ExperimentalTime\ninternal expect object MonotonicTimeSource :
TimeSource\n\n\n /**\n * An abstract class used to implement time sources that return their readings as [Long] values
in the specified [unit].\n *\n * @property unit The unit in which this time source's readings are expressed.\n
*/\n\n\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic abstract class AbstractLongTimeSource(protected val
unit: DurationUnit) : TimeSource {\n    /**\n    * This protected method should be overridden to return the current
reading of the time source expressed as a [Long] number\n    * in the unit specified by the [unit] property.\n    */\n\n
protected abstract fun read(): Long\n\n\n    private class LongTimeMark(private val startedAt: Long, private val
timeSource: AbstractLongTimeSource, private val offset: Duration) : TimeMark() {\n    override fun
elapsedNow(): Duration = (timeSource.read() - startedAt).toDuration(timeSource.unit) - offset\n    override fun
plus(duration: Duration): TimeMark = LongTimeMark(startedAt, timeSource, offset + duration)\n    }\n\n\n    override
fun markNow(): TimeMark = LongTimeMark(read(), this, Duration.ZERO)\n}\n\n\n /**\n * An abstract class used to
implement time sources that return their readings as [Double] values in the specified [unit].\n *\n * @property unit
The unit in which this time source's readings are expressed.\n
*/\n\n\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic abstract class AbstractDoubleTimeSource(protected val
unit: DurationUnit) : TimeSource {\n    /**\n    * This protected method should be overridden to return the current
reading of the time source expressed as a [Double] number\n    * in the unit specified by the [unit] property.\n
*/\n\n\n    protected abstract fun read(): Double\n\n\n    private class DoubleTimeMark(private val startedAt: Double,
private val timeSource: AbstractDoubleTimeSource, private val offset: Duration) : TimeMark() {\n    override fun
elapsedNow(): Duration = (timeSource.read() - startedAt).toDuration(timeSource.unit) - offset\n    override fun
plus(duration: Duration): TimeMark = DoubleTimeMark(startedAt, timeSource, offset + duration)\n    }\n\n\n}

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override fun markNow(): TimeMark = DoubleTimeMark(read(), this, Duration.ZERO)}\n\n/**\n * A time source
that has programmatically updatable readings. It is useful as a predictable source of time in tests.\n *\n * The current
reading value can be advanced by the specified duration amount with the operator [plusAssign]:\n *\n * val
timeSource = TestTimeSource()\n * timeSource += 10.seconds\n * \n *\n * Implementation note: the current
reading value is stored as a [Long] number of nanoseconds,\n * thus it's capable to represent a time range of
approximately \u00b1292 years.\n * Should the reading value overflow as the result of [plusAssign] operation, an
[IllegalStateException] is thrown.\n *\n * @SinceKotlin("1.3")\n @ExperimentalTime\n public class TestTimeSource
: AbstractLongTimeSource(unit = DurationUnit.NANOSECONDS) {\n     private var reading: Long = 0L\n\n     override fun read(): Long = reading\n\n     /**\n      * Advances the current reading value of this time source by the
specified [duration].\n      *\n      * [duration] value is rounded down towards zero when converting it to a [Long]
number of nanoseconds.\n      *\n      * For example, if the duration being added is `0.6.nanoseconds`, the reading doesn't
advance because\n      *\n      * the duration value is rounded to zero nanoseconds.\n      *\n      * @throws
IllegalStateException when the reading value overflows as the result of this operation.\n      *\n      * public operator fun
plusAssign(duration: Duration) {\n         val delta = duration.toDouble(unit)\n         val longDelta = delta.toLong()\n         reading = if (longDelta != Long.MIN_VALUE && longDelta != Long.MAX_VALUE) {\n             // when delta
fits in long, add it as long\n             val newReading = reading + longDelta\n             if (reading xor longDelta >= 0
&& reading xor newReading < 0) overflow(duration)\n             newReading\n         } else {\n             // when delta is
greater than long, add it as double\n             val newReading = reading + delta\n             if (newReading >
Long.MAX_VALUE || newReading < Long.MIN_VALUE) overflow(duration)\n             newReading.toLong()\n         }\n     }\n\n     private fun overflow(duration: Duration) {\n         throw IllegalStateException("TestTimeSource will
overflow if its reading ${reading}ns is advanced by $duration.")\n     }\n\n     @SinceKotlin("1.3")\n     @ExperimentalTime\n     @Deprecated("Use TimeSource.Monotonic instead.",
ReplaceWith("TimeSource.Monotonic", "kotlin.time.TimeSource"))\n     public typealias MonoClock =
TimeSource.Monotonic\n\n     @SinceKotlin("1.3")\n     @ExperimentalTime\n     @Deprecated("Use
AbstractLongTimeSource instead.", ReplaceWith("AbstractLongTimeSource",
"kotlin.time.AbstractLongTimeSource"))\n     public typealias AbstractLongClock =
AbstractLongTimeSource\n\n     @SinceKotlin("1.3")\n     @ExperimentalTime\n     @Deprecated("Use
AbstractDoubleTimeSource instead.", ReplaceWith("AbstractDoubleTimeSource",
"kotlin.time.AbstractDoubleTimeSource"))\n     public typealias AbstractDoubleClock =
AbstractDoubleTimeSource\n\n     @SinceKotlin("1.3")\n     @ExperimentalTime\n     @Deprecated("Use TestTimeSource
instead.", ReplaceWith("TestTimeSource", "kotlin.time.TestTimeSource"))\n     public typealias TestClock =
TestTimeSource\n\n     /*\n      * Copyright 2010-2020 JetBrains s.r.o. and Kotlin Programming Language contributors.\n
      *\n      * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
      *\n      * \n      * package kotlin.time\n      * import kotlin.contracts.*\n      * \n      * Executes the given function [block] and returns the
duration of elapsed time interval.\n      *\n      * The elapsed time is measured with [TimeSource.Monotonic].\n
      *\n      * \n      * @SinceKotlin("1.3")\n      * @ExperimentalTime\n      * public inline fun measureTime(block: () -> Unit): Duration {\n
      *     contract {\n      *         callsInPlace(block, InvocationKind.EXACTLY_ONCE)\n      *     }\n      *     return
TimeSource.Monotonic.measureTime(block)\n      * }\n\n      * \n      * Executes the given function [block] and returns the
duration of elapsed time interval.\n      *\n      * The elapsed time is measured with the specified `this` [TimeSource]
instance.\n      *\n      * \n      * @SinceKotlin("1.3")\n      * @ExperimentalTime\n      * public inline fun TimeSource.measureTime(block: ()
-> Unit): Duration {\n      *     contract {\n      *         callsInPlace(block, InvocationKind.EXACTLY_ONCE)\n      *     }\n      *     val
mark = markNow()\n      *     block()\n      *     return mark.elapsedNow()\n      * }\n\n      * \n      * Data class representing a result of
executing an action, along with the duration of elapsed time interval.\n      *\n      * @property value the result of the
action.\n      *\n      * @property duration the time elapsed to execute the action.\n
      *\n      * \n      * @SinceKotlin("1.3")\n      * @ExperimentalTime\n      * public data class TimedValue<T>(val value: T, val duration:
Duration)\n      * \n      * \n      * Executes the given function [block] and returns an instance of [TimedValue] class, containing
both\n      *\n      * the result of the function execution and the duration of elapsed time interval.\n      *\n      * The elapsed time is
measured with [TimeSource.Monotonic].\n      *\n      * \n      * @SinceKotlin("1.3")\n      * @ExperimentalTime\n      * public inline fun <T>

```

```

measureTimedValue(block: () -> T): TimedValue<T> {
    contract {
        callsInPlace(block,
        InvocationKind.EXACTLY_ONCE)
    }
    return
    TimeSource.Monotonic.measureTimedValue(block)
}

/**
 * Executes the given [block] and returns an
 * instance of [TimedValue] class, containing both
 * the result of function execution and the duration of elapsed time
 * interval.
 * The elapsed time is measured with the specified `this` [TimeSource] instance.
 */
@SinceKotlin("1.3")
@ExperimentalTime
public inline fun <T> TimeSource.measureTimedValue(block: ()
-> T): TimedValue<T> {
    contract {
        callsInPlace(block, InvocationKind.EXACTLY_ONCE)
    }
    val mark = markNow()
    val result = block()
    return TimedValue(result, mark.elapsedNow())
}

/*
 * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.
 * Use of this source code is
 * governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.
 */
package
kotlin

import kotlin.internal.InlineOnly

/**
 * Returns a hash code value for the object or zero if the object
 * is `null`.
 * @see Any.hashCode
 */
@SinceKotlin("1.3")
@InlineOnly
public inline fun
Any?.hashCode(): Int = this?.hashCode() ?: 0

/*
 * Copyright 2010-2018 JetBrains s.r.o. and Kotlin
 * Programming Language contributors.
 * Use of this source code is governed by the Apache 2.0 license that can be
 * found in the license/LICENSE.txt file.
 */
package kotlin

/**
 * Represents a version of the Kotlin standard
 * library.
 * [major], [minor] and [patch] are integer components of a version,
 * they must be non-negative and
 * not greater than 255 (MAX_COMPONENT_VALUE).
 * @constructor Creates a version from all three
 * components.
 */
@SinceKotlin("1.1")
public class KotlinVersion(val major: Int, val minor: Int, val patch: Int) :
Comparable<KotlinVersion> {
    /**
     * Creates a version from [major] and [minor] components, leaving
     * [patch] component zero.
     */
    public constructor(major: Int, minor: Int) : this(major, minor, 0)

    private val
    version = versionOf(major, minor, patch)

    private fun versionOf(major: Int, minor: Int, patch: Int): Int {
        require(major in 0..MAX_COMPONENT_VALUE && minor in 0..MAX_COMPONENT_VALUE && patch in
0..MAX_COMPONENT_VALUE) {
            "Version components are out of range: $major.$minor.$patch"
        }
        return major.shl(16) + minor.shl(8) + patch
    }

    /**
     * Returns the string representation of this
    version
     */
    override fun toString(): String = "$major.$minor.$patch"

    override fun equals(other:
Any?): Boolean {
        if (this === other) return true
        val otherVersion = (other as? KotlinVersion) ?: return
false
        return this.version == otherVersion.version
    }

    override fun hashCode(): Int = version

    override fun compareTo(other: KotlinVersion): Int = version - other.version

    /**
     * Returns `true` if this
    version is not less than the version specified
     * with the provided [major] and [minor] components.
     */
    public fun isAtLeast(major: Int, minor: Int): Boolean = // this.version >= versionOf(major, minor, 0)
this.major > major || (this.major == major &&
this.minor >= minor)

    /**
     * Returns `true` if this
    version is not less than the version specified
     * with the provided [major], [minor] and [patch] components.
     */
    public fun isAtLeast(major: Int, minor: Int, patch: Int): Boolean = // this.version >= versionOf(major, minor,
patch)
this.major > major || (this.major == major &&
(this.minor > minor || this.minor == minor
&&
this.patch >= patch))

    companion object {
        /**
         * Maximum value a version
        component can have, a constant value 255.
         */
        // NOTE: Must be placed before CURRENT because its
        initialization requires this field being initialized in JS
        public const val MAX_COMPONENT_VALUE =
255

        /**
         * Returns the current version of the Kotlin standard library.
         */
        @kotlin.jvm.JvmField
        public val CURRENT: KotlinVersion = KotlinVersion(1, 3, 70) // value is written here
        automatically during build
    }
}

/*
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 * Language contributors.
 * Use of this source code is governed by the Apache 2.0 license that can be found in the
 * license/LICENSE.txt file.
 */
@file:kotlin.jvm.JvmName("LateinitKt")
@file:Suppress("unused")
package kotlin

import
kotlin.internal.InlineOnly
import kotlin.internal.AccessibleLateinitPropertyLiteral
import
kotlin.reflect.KProperty0

/**
 * Returns `true` if this lateinit property has been assigned a value, and `false`
 * otherwise.
 * Cannot be used in an inline function, to avoid binary compatibility issues.
 */
@SinceKotlin("1.2")
@InlineOnly
inline val @receiver:AccessibleLateinitPropertyLiteral
KProperty0<*>.isInitialized: Boolean
    get() = throw NotImplementedError("Implementation is

```

```

intrinsic()\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use
of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*\n\n@file:kotlin.jvm.JvmName("LazyKt")\n@file:kotlin.jvm.JvmMultifileClass\n\npackage kotlin\n\nimport
kotlin.reflect.KProperty\n\n/**\n * Represents a value with lazy initialization.\n *\n * To create an instance of
[Lazy] use the [lazy] function.\n *\n\npublic interface Lazy<out T> {\n    /**\n     * Gets the lazily initialized value of
the current Lazy instance.\n     * Once the value was initialized it must not change during the rest of lifetime of this
Lazy instance.\n     *\n     public val value: T\n     /**\n     * Returns `true` if a value for this Lazy instance has been
already initialized, and `false` otherwise.\n     * Once this function has returned `true` it stays `true` for the rest of
lifetime of this Lazy instance.\n     *\n     public fun isInitialized(): Boolean\n}\n\n/**\n * Creates a new instance of
the [Lazy] that is already initialized with the specified [value].\n *\n\npublic fun <T> lazyOf(value: T): Lazy<T> =
InitializedLazyImpl(value)\n\n/**\n * An extension to delegate a read-only property of type [T] to an instance of
[Lazy].\n *\n * This extension allows to use instances of Lazy for property delegation:\n *\n`val property: String by
lazy { initializer }`\n *\n\n@kotlin.internal.InlineOnly\n\npublic inline operator fun <T> Lazy<T>.getValue(thisRef:
Any?, property: KProperty<*>): T = value\n\n/**\n * Specifies how a [Lazy] instance synchronizes initialization
among multiple threads.\n *\n\npublic enum class LazyThreadSafetyMode {\n    /**\n     * Locks are used to ensure
that only a single thread can initialize the [Lazy] instance.\n     *\n     SYNCHRONIZED,\n     /**\n     * Initializer
function can be called several times on concurrent access to uninitialized [Lazy] instance value,\n     * but only the
first returned value will be used as the value of [Lazy] instance.\n     *\n     PUBLICATION,\n     /**\n     * No
locks are used to synchronize an access to the [Lazy] instance value; if the instance is accessed from multiple
threads, its behavior is undefined.\n     *\n     * This mode should not be used unless the [Lazy] instance is
guaranteed never to be initialized from more than one thread.\n     *\n     NONE,\n}\n\n\ninternal object
UNINITIALIZED_VALUE\n\n// internal to be called from lazy in JS\n\ninternal class UnsafeLazyImpl<out
T>(initializer: () -> T) : Lazy<T>, Serializable {\n    private var initializer: (() -> T)? = initializer\n    private var
_value: Any? = UNINITIALIZED_VALUE\n\n    override val value: T\n        get() {\n            if (_value ===
UNINITIALIZED_VALUE) {\n                _value = initializer!!()\n                initializer = null\n            }\n
@Suppress("UNCHECKED_CAST")\n            return _value as T\n        }\n\n    override fun isInitialized():
Boolean = _value !== UNINITIALIZED_VALUE\n\n    override fun toString(): String = if (isInitialized())
value.toString() else "Lazy value not initialized yet."\n\n    private fun writeReplace(): Any =
InitializedLazyImpl(value)\n}\n\n\ninternal class InitializedLazyImpl<out T>(override val value: T) : Lazy<T>,
Serializable {\n    override fun isInitialized(): Boolean = true\n\n    override fun toString(): String =
value.toString()\n}\n", "/*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n
*\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("NumbersKt")\npackage kotlin\n\n/**\n *
Counts the number of set bits in the binary representation of this [Int] number.\n
*\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n\npublic expect fun Int.countOneBits(): Int\n\n/**\n * Counts
the number of consecutive most significant bits that are zero in the binary representation of this [Int] number.\n
*\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n\npublic expect fun Int.countLeadingZeroBits(): Int\n\n/**\n *
Counts the number of consecutive least significant bits that are zero in the binary representation of this [Int]
number.\n *\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n\npublic expect fun Int.countTrailingZeroBits():
Int\n\n/**\n * Returns a number having a single bit set in the position of the most significant set bit of this [Int]
number,\n * or zero, if this number is zero.\n *\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n\npublic expect
fun Int.takeHighestOneBit(): Int\n\n/**\n * Returns a number having a single bit set in the position of the least
significant set bit of this [Int] number,\n * or zero, if this number is zero.\n
*\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n\npublic expect fun Int.takeLowestOneBit(): Int\n\n/**\n *
Rotates the binary representation of this [Int] number left by the specified [bitCount] number of bits.\n * The most
significant bits pushed out from the left side reenter the number as the least significant bits on the right side.\n
*\n * Rotating the number left by a negative bit count is the same as rotating it right by the negated bit count.\n
*\n

```



```

`number.rotateLeft(-n) == number.rotateRight(n)`\n * Rotating by a multiple of [Int.SIZE_BITS] (32) returns
the same number, or more generally\n * `number.rotateLeft(n) == number.rotateLeft(n % 32)`\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic expect fun Int.rotateLeft(bitCount: Int): Int\n\n/**\n * Rotates the binary representation of this [Int] number right by the specified [bitCount] number of bits.\n * The
least significant bits pushed out from the right side reenter the number as the most significant bits on the left side.\n
*\n * Rotating the number right by a negative bit count is the same as rotating it left by the negated bit count:\n *
`number.rotateRight(-n) == number.rotateLeft(n)`\n * Rotating by a multiple of [Int.SIZE_BITS] (32) returns
the same number, or more generally\n * `number.rotateRight(n) == number.rotateRight(n % 32)`\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic expect fun Int.rotateRight(bitCount: Int):
Int\n\n/**\n * Counts the number of set bits in the binary representation of this [Long] number.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic expect fun Long.countOneBits(): Int\n\n/**\n *
Counts the number of consecutive most significant bits that are zero in the binary representation of this [Long]
number.\n *\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic expect fun Long.countLeadingZeroBits():
Int\n\n/**\n * Counts the number of consecutive least significant bits that are zero in the binary representation of
this [Long] number.\n *\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic expect fun
Long.countTrailingZeroBits(): Int\n\n/**\n * Returns a number having a single bit set in the position of the most
significant set bit of this [Long] number,\n * or zero, if this number is zero.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic expect fun Long.takeHighestOneBit(): Long\n\n/**\n *
Returns a number having a single bit set in the position of the least significant set bit of this [Long] number,\n *
or zero, if this number is zero.\n *\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic expect fun
Long.takeLowestOneBit(): Long\n\n/**\n * Rotates the binary representation of this [Long] number left by the
specified [bitCount] number of bits.\n * The most significant bits pushed out from the left side reenter the number as
the least significant bits on the right side.\n *\n * Rotating the number left by a negative bit count is the same as
rotating it right by the negated bit count:\n * `number.rotateLeft(-n) == number.rotateRight(n)`\n * Rotating by a
multiple of [Long.SIZE_BITS] (64) returns the same number, or more generally\n * `number.rotateLeft(n) ==
number.rotateLeft(n % 64)`\n *\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic expect fun
Long.rotateLeft(bitCount: Int): Long\n\n/**\n * Rotates the binary representation of this [Long] number right by the
specified [bitCount] number of bits.\n * The least significant bits pushed out from the right side reenter the number
as the most significant bits on the left side.\n *\n * Rotating the number right by a negative bit count is the same as
rotating it left by the negated bit count:\n * `number.rotateRight(-n) == number.rotateLeft(n)`\n * Rotating by a
multiple of [Long.SIZE_BITS] (64) returns the same number, or more generally\n * `number.rotateRight(n) ==
number.rotateRight(n % 64)`\n *\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic expect fun
Long.rotateRight(bitCount: Int): Long\n\n/**\n * Counts the number of set bits in the binary representation of this
[Byte] number.\n *\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline
fun Byte.countOneBits(): Int = (toInt() and 0xFF).countOneBits()\n\n/**\n * Counts the number of consecutive most
significant bits that are zero in the binary representation of this [Byte] number.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
Byte.countLeadingZeroBits(): Int = (toInt() and 0xFF).countLeadingZeroBits() - (Int.SIZE_BITS -
Byte.SIZE_BITS)\n\n/**\n * Counts the number of consecutive least significant bits that are zero in the binary
representation of this [Byte] number.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
Byte.countTrailingZeroBits(): Int = (toInt() or 0x100).countTrailingZeroBits()\n\n/**\n * Returns a number having a
single bit set in the position of the most significant set bit of this [Byte] number,\n * or zero, if this number is zero.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
Byte.takeHighestOneBit(): Byte = (toInt() and 0xFF).takeHighestOneBit().toByte()\n\n/**\n * Returns a number
having a single bit set in the position of the least significant set bit of this [Byte] number,\n * or zero, if this number
is zero.\n *\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun
Byte.takeLowestOneBit(): Byte = toInt().takeLowestOneBit().toByte()\n\n/**\n * Rotates the binary

```

representation of this [Byte] number left by the specified [bitCount] number of bits.\n \* The most significant bits pushed out from the left side reenter the number as the least significant bits on the right side.\n \* Rotating the number left by a negative bit count is the same as rotating it right by the negated bit count:\n \* `number.rotateLeft(-n) == number.rotateRight(n)`\n \* Rotating by a multiple of [Byte.SIZE\_BITS] (8) returns the same number, or more generally\n \* `number.rotateLeft(n) == number.rotateLeft(n % 8)`\n

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun Byte.rotateLeft(bitCount: Int): Byte =\n    (toInt().shl(bitCount and 7) or (toInt() and 0xFF).ushr(8 - (bitCount and 7))).toByte()\n\n/**\n * Rotates the binary representation of this [Byte] number right by the specified [bitCount] number of bits.\n * The least significant bits pushed out from the right side reenter the number as the most significant bits on the left side.\n * Rotating the number right by a negative bit count is the same as rotating it left by the negated bit count:\n * `number.rotateRight(-n) == number.rotateLeft(n)`\n * Rotating by a multiple of [Byte.SIZE_BITS] (8) returns the same number, or more generally\n * `number.rotateRight(n) == number.rotateRight(n % 8)`\n */\n\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun Byte.rotateRight(bitCount: Int): Byte =\n    (toInt().shl(8 - (bitCount and 7)) or (toInt() and 0xFF).ushr(bitCount and 7)).toByte()\n\n/**\n * Counts the number of set bits in the binary representation of this [Short] number.\n */\n\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun Short.countOneBits(): Int = (toInt() and 0xFFFF).countOneBits()\n\n/**\n * Counts the number of consecutive most significant bits that are zero in the binary representation of this [Short] number.\n */\n\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun Short.countLeadingZeroBits(): Int =\n    (toInt() and 0xFFFF).countLeadingZeroBits() - (Int.SIZE_BITS - Short.SIZE_BITS)\n\n/**\n * Counts the number of consecutive least significant bits that are zero in the binary representation of this [Short] number.\n */\n\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun Short.countTrailingZeroBits(): Int = (toInt() or 0x10000).countTrailingZeroBits()\n\n/**\n * Returns a number having a single bit set in the position of the most significant set bit of this [Short] number,\n * or zero, if this number is zero.\n */\n\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun Short.takeHighestOneBit(): Short = (toInt() and 0xFFFF).takeHighestOneBit().toShort()\n\n/**\n * Returns a number having a single bit set in the position of the least significant set bit of this [Short] number,\n * or zero, if this number is zero.\n */\n\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic inline fun Short.takeLowestOneBit(): Short = toInt().takeLowestOneBit().toShort()\n\n/**\n * Rotates the binary representation of this [Short] number left by the specified [bitCount] number of bits.\n * The most significant bits pushed out from the left side reenter the number as the least significant bits on the right side.\n * Rotating the number left by a negative bit count is the same as rotating it right by the negated bit count:\n * `number.rotateLeft(-n) == number.rotateRight(n)`\n * Rotating by a multiple of [Short.SIZE_BITS] (16) returns the same number, or more generally\n * `number.rotateLeft(n) == number.rotateLeft(n % 16)`\n */\n\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun Short.rotateLeft(bitCount: Int): Short =\n    (toInt().shl(bitCount and 15) or (toInt() and 0xFFFF).ushr(16 - (bitCount and 15))).toShort()\n\n/**\n * Rotates the binary representation of this [Short] number right by the specified [bitCount] number of bits.\n * The least significant bits pushed out from the right side reenter the number as the most significant bits on the left side.\n * Rotating the number right by a negative bit count is the same as rotating it left by the negated bit count:\n * `number.rotateRight(-n) == number.rotateLeft(n)`\n * Rotating by a multiple of [Short.SIZE_BITS] (16) returns the same number, or more generally\n * `number.rotateRight(n) == number.rotateRight(n % 16)`\n */\n\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun Short.rotateRight(bitCount: Int): Short =\n    (toInt().shl(16 - (bitCount and 15)) or (toInt() and 0xFFFF).ushr(bitCount and 15)).toShort()\n\n/**\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\npackage kotlin\nimport kotlin.internal.RequireKotlin\nimport kotlin.internal.RequireKotlinVersionKind\n@kotlin.internal.InlineOnly\n@SinceKotlin("1.2")\n@Suppress("IN
```

```

VISIBLE_MEMBER", "INVISIBLE_REFERENCE")\n@RequireKotlin("1.2.30", level =
DeprecationLevel.HIDDEN, versionKind = RequireKotlinVersionKind.COMPILER_VERSION)\npublic inline fun
<R> suspend(noinline block: suspend () -> R): suspend () -> R = block\n", "/*\n * Copyright 2010-2018 JetBrains
s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0
license that can be found in the license/LICENSE.txt file.\n
*/\n\n@file:kotlin.jvm.JvmName("TuplesKt")\n\npackage kotlin\n\n/**\n * Represents a generic pair of two
values.\n * There is no meaning attached to values in this class, it can be used for any purpose.\n * Pair exhibits
value semantics, i.e. two pairs are equal if both components are equal.\n * An example of decomposing it into
values:\n * @sample samples.misc.Tuples.pairDestructuring\n * @param A type of the first value.\n * @param
B type of the second value.\n * @property first First value.\n * @property second Second value.\n * @constructor
Creates a new instance of Pair.\n */\npublic data class Pair<out A, out B>(\n    public val first: A,\n    public val
second: B\n) : Serializable {\n    /**\n     * Returns string representation of the [Pair] including its [first] and
[second] values.\n     */\n    public override fun toString(): String = "$first, $second"\n}\n\n/**\n * Creates a tuple
of type [Pair] from this and [that].\n * This can be useful for creating [Map] literals with less noise, for
example:\n * @sample samples.collections.Maps.Instantiation.mapFromPairs\n */\npublic infix fun <A, B>
A.to(that: B): Pair<A, B> = Pair(this, that)\n\n/**\n * Converts this pair into a list.\n * @sample
samples.misc.Tuples.pairToList\n */\npublic fun <T> Pair<T, T>.toList(): List<T> = listOf(first, second)\n\n/**\n
 * Represents a triad of values\n * There is no meaning attached to values in this class, it can be used for any
purpose.\n * Triple exhibits value semantics, i.e. two triples are equal if all three components are equal.\n * An
example of decomposing it into values:\n * @sample samples.misc.Tuples.tripleDestructuring\n * @param A
type of the first value.\n * @param B type of the second value.\n * @param C type of the third value.\n * @property
first First value.\n * @property second Second value.\n * @property third Third value.\n */\npublic data class
Triple<out A, out B, out C>(\n    public val first: A,\n    public val second: B,\n    public val third: C\n) : Serializable
{\n    /**\n     * Returns string representation of the [Triple] including its [first], [second] and [third] values.\n
     */\n    public override fun toString(): String = "$first, $second, $third"\n}\n\n/**\n * Converts this triple into a
list.\n * @sample samples.misc.Tuples.tripleToList\n */\npublic fun <T> Triple<T, T, T>.toList(): List<T> =
listOf(first, second, third)\n", "/*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language
contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\n// Auto-generated file. DO NOT EDIT!\n\npackage kotlin.ranges\n\n\nimport
kotlin.internal.*\n\n/**\n * A range of values of type `UInt`.\n
*/\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic class UIntRange(start: UInt, endInclusive: UInt)
: UIntProgression(start, endInclusive, 1), ClosedRange<UInt> {\n    override val start: UInt get() = first\n    override
val endInclusive: UInt get() = last\n\n    override fun contains(value: UInt): Boolean = first <= value && value <=
last\n\n    override fun isEmpty(): Boolean = first > last\n\n    override fun equals(other: Any?): Boolean =\n
other is UIntRange && (isEmpty() && other.isEmpty()) ||\n        first == other.first && last == other.last\n}\n\n
override fun hashCode(): Int =\n    if (isEmpty()) -1 else (31 * first.toInt() + last.toInt())\n\n    override fun
toString(): String = "$first..$last"\n\n    companion object {\n        /** An empty range of values of type UInt. */\n
        public val EMPTY: UIntRange = UIntRange(UInt.MAX_VALUE, UInt.MIN_VALUE)\n    }\n}\n\n/**\n * A
progression of values of type `UInt`.\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic open
class UIntProgression\n\ninternal constructor(\n    start: UInt,\n    endInclusive: UInt,\n    step: Int\n) : Iterable<UInt>
{\n    init {\n        if (step == 0.toInt()) throw kotlin.IllegalArgumentException("Step must be non-zero.")\n        if
(step == Int.MIN_VALUE) throw kotlin.IllegalArgumentException("Step must be greater than Int.MIN_VALUE
to avoid overflow on negation.")\n    }\n\n    /**\n     * The first element in the progression.\n     */\n    public val
first: UInt = start\n\n    /**\n     * The last element in the progression.\n     */\n    public val last: UInt =
getProgressionLastElement(start, endInclusive, step)\n\n    /**\n     * The step of the progression.\n     */\n    public
val step: Int = step\n\n    override fun iterator(): UIntIterator = UIntProgressionIterator(first, last, step)\n\n    /**
     * Checks if the progression is empty. */\n    public open fun isEmpty(): Boolean = if (step > 0) first > last else first <
last\n\n    override fun equals(other: Any?): Boolean =\n        other is UIntProgression && (isEmpty() &&

```



```

progression.\n    *^n    public val first: ULong = start\n\n    /**\n    * The last element in the progression.\n    *^n
public val last: ULong = getProgressionLastElement(start, endInclusive, step)\n\n    /**\n    * The step of the
progression.\n    *^n    public val step: Long = step\n\n    override fun iterator(): ULongIterator =
ULongProgressionIterator(first, last, step)\n\n    /** Checks if the progression is empty. */\n    public open fun
isEmpty(): Boolean = if (step > 0) first > last else first < last\n\n    override fun equals(other: Any?): Boolean =\n
other is ULongProgression && (isEmpty() && other.isEmpty() ||\n        first == other.first && last ==
other.last && step == other.step)\n\n    override fun hashCode(): Int =\n        if (isEmpty()) -1 else (31 * (31 * (first
xor (first shr 32)).toInt()) + (last xor (last shr 32)).toInt()) + (step xor (step ushr 32)).toInt())\n\n    override fun
toString(): String = if (step > 0) \"$first..$last step $step\" else \"$first downTo $last step ${-step}\"\n\n    companion
object {\n        /**\n        * Creates ULongProgression within the specified bounds of a closed range.\n\n        * The
progression starts with the [rangeStart] value and goes toward the [rangeEnd] value not excluding it, with the
specified [step].\n        * In order to go backwards the [step] must be negative.\n        * [step] must be
greater than `Long.MIN_VALUE` and not equal to zero.\n        *^n        public fun fromClosedRange(rangeStart:
ULong, rangeEnd: ULong, step: Long): ULongProgression = ULongProgression(rangeStart, rangeEnd, step)\n
})\n\n\n    /**\n    * An iterator over a progression of values of type `ULong`.\n    * @property step the number by which
the value is incremented on each step.\n    *^n    @SinceKotlin("1.3")\n    @ExperimentalUnsignedTypes\n    private class
ULongProgressionIterator(first: ULong, last: ULong, step: Long) : ULongIterator() {\n        private val finalElement =
last\n        private var hasNext: Boolean = if (step > 0) first <= last else first >= last\n        private val step =
step.toULong() // use 2-complement math for negative steps\n        private var next = if (hasNext) first else
finalElement\n\n        override fun hasNext(): Boolean = hasNext\n\n        override fun nextULong(): ULong {\n            val
value = next\n            if (value == finalElement) {\n                if (!hasNext) throw kotlin.NoSuchElementException()\n
                hasNext = false\n            } else {\n                next += step\n            }\n            return value\n        }\n    }\n\n\n    /**\n    * Copyright
2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.\n    * Use of this source code is governed
by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n    *^n\n    package kotlin.math\n\n\n    *
Returns the smaller of two values.\n
    *^n    @SinceKotlin("1.3")\n    @ExperimentalUnsignedTypes\n    @kotlin.internal.InlineOnly\n    public inline fun min(a:
UInt, b: UInt): UInt {\n        return minOf(a, b)\n    }\n\n\n    /**\n    * Returns the smaller of two values.\n
    *^n    @SinceKotlin("1.3")\n    @ExperimentalUnsignedTypes\n    @kotlin.internal.InlineOnly\n    public inline fun min(a:
ULong, b: ULong): ULong {\n        return minOf(a, b)\n    }\n\n\n    /**\n    * Returns the greater of two values.\n
    *^n    @SinceKotlin("1.3")\n    @ExperimentalUnsignedTypes\n    @kotlin.internal.InlineOnly\n    public inline fun max(a:
UInt, b: UInt): UInt {\n        return maxOf(a, b)\n    }\n\n\n    /**\n    * Returns the greater of two values.\n
    *^n    @SinceKotlin("1.3")\n    @ExperimentalUnsignedTypes\n    @kotlin.internal.InlineOnly\n    public inline fun max(a:
ULong, b: ULong): ULong {\n        return maxOf(a, b)\n    }\n\n\n    /**\n    * Copyright 2010-2019 JetBrains s.r.o. and Kotlin
Programming Language contributors.\n    * Use of this source code is governed by the Apache 2.0 license that can be
found in the license/LICENSE.txt file.\n    *^n    @file:kotlin.jvm.JvmName("UNumbersKt")\n    package
kotlin\n\n\n    * Counts the number of set bits in the binary representation of this [UInt] number.\n
    *^n    @SinceKotlin("1.3")\n    @ExperimentalStdlibApi\n    @ExperimentalUnsignedTypes\n    @kotlin.internal.InlineOnl
y\n    public inline fun UInt.countOneBits(): Int = toInt().countOneBits()\n\n\n    /**\n    * Counts the number of consecutive
most significant bits that are zero in the binary representation of this [UInt] number.\n
    *^n    @SinceKotlin("1.3")\n    @ExperimentalStdlibApi\n    @ExperimentalUnsignedTypes\n    @kotlin.internal.InlineOnl
y\n    public inline fun UInt.countLeadingZeroBits(): Int = toInt().countLeadingZeroBits()\n\n\n    /**\n    * Counts the
number of consecutive least significant bits that are zero in the binary representation of this [UInt] number.\n
    *^n    @SinceKotlin("1.3")\n    @ExperimentalStdlibApi\n    @ExperimentalUnsignedTypes\n    @kotlin.internal.InlineOnl
y\n    public inline fun UInt.countTrailingZeroBits(): Int = toInt().countTrailingZeroBits()\n\n\n    /**\n    * Returns a number
having a single bit set in the position of the most significant set bit of this [UInt] number,\n    * or zero, if this number
is zero.\n
    *^n    @SinceKotlin("1.3")\n    @ExperimentalStdlibApi\n    @ExperimentalUnsignedTypes\n    @kotlin.internal.InlineOnl
y\n    public inline fun UInt.takeHighestOneBit(): UInt = toInt().takeHighestOneBit().toInt()\n\n\n    /**\n    * Returns a

```

number having a single bit set in the position of the least significant set bit of this [UInt] number, or zero, if this number is zero.

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UInt.takeLowestOneBit(): UInt = toInt().takeLowestOneBit().toUInt()\n\n * Rotates the binary representation of this [UInt] number left by the specified [bitCount] number of bits. * The most significant bits pushed out from the left side reenter the number as the least significant bits on the right side. * Rotating the number left by a negative bit count is the same as rotating it right by the negated bit count: *`
```

```
number.rotateLeft(-n) == number.rotateRight(n)`\n * Rotating by a multiple of [UInt.SIZE_BITS] (32) returns the same number, or more generally *`number.rotateLeft(n) == number.rotateLeft(n % 32)`\n`
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UInt.rotateLeft(bitCount: Int): UInt = toInt().rotateLeft(bitCount).toUInt()\n\n * Rotates the binary representation of this [UInt] number right by the specified [bitCount] number of bits. * The least significant bits pushed out from the right side reenter the number as the most significant bits on the left side. * Rotating the number right by a negative bit count is the same as rotating it left by the negated bit count: *`
```

```
number.rotateRight(-n) == number.rotateLeft(n)`\n * Rotating by a multiple of [UInt.SIZE_BITS] (32) returns the same number, or more generally *`number.rotateRight(n) == number.rotateRight(n % 32)`\n`
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UInt.rotateRight(bitCount: Int): UInt = toInt().rotateRight(bitCount).toUInt()\n\n * Counts the number of set bits in the binary representation of this [ULong] number.\n`
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun ULong.countOneBits(): Int = toLong().countOneBits()\n\n * Counts the number of consecutive most significant bits that are zero in the binary representation of this [ULong] number.\n`
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun ULong.countLeadingZeroBits(): Int = toLong().countLeadingZeroBits()\n\n * Counts the number of consecutive least significant bits that are zero in the binary representation of this [ULong] number.\n`
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun ULong.countTrailingZeroBits(): Int = toLong().countTrailingZeroBits()\n\n * Returns a number having a single bit set in the position of the most significant set bit of this [ULong] number, or zero, if this number is zero.\n`
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun ULong.takeHighestOneBit(): ULong = toLong().takeHighestOneBit().toULong()\n\n * Returns a number having a single bit set in the position of the least significant set bit of this [ULong] number, or zero, if this number is zero.\n`
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun ULong.takeLowestOneBit(): ULong = toLong().takeLowestOneBit().toULong()\n\n * Rotates the binary representation of this [ULong] number left by the specified [bitCount] number of bits. * The most significant bits pushed out from the left side reenter the number as the least significant bits on the right side. * Rotating the number left by a negative bit count is the same as rotating it right by the negated bit count: *`
```

```
number.rotateLeft(-n) == number.rotateRight(n)`\n * Rotating by a multiple of [ULong.SIZE_BITS] (64) returns the same number, or more generally *`number.rotateLeft(n) == number.rotateLeft(n % 64)`\n`
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun ULong.rotateLeft(bitCount: Int): ULong = toLong().rotateLeft(bitCount).toULong()\n\n * Rotates the binary representation of this [ULong] number right by the specified [bitCount] number of bits. * The least significant bits pushed out from the right side reenter the number as the most significant bits on the left side. * Rotating the number right by a negative bit count is the same as rotating it left by the negated bit count: *`
```

```
number.rotateRight(-n) == number.rotateLeft(n)`\n * Rotating by a multiple of [ULong.SIZE_BITS] (64) returns the same number, or more generally *`number.rotateRight(n) == number.rotateRight(n % 64)`\n`
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly
```

```

y\npublic inline fun ULong.rotateRight(bitCount: Int): ULong = toLong().rotateRight(bitCount).toULong()\n\n/**\n * Counts the number of set bits in the binary representation of this [UByte] number.\n *\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UByte.countOneBits(): Int = toUInt().countOneBits()\n\n/**\n * Counts the number of consecutive most significant bits that are zero in the binary representation of this [UByte] number.\n *\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UByte.countLeadingZeroBits(): Int = toByte().countLeadingZeroBits()\n\n/**\n * Counts the number of consecutive least significant bits that are zero in the binary representation of this [UByte] number.\n *\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UByte.countTrailingZeroBits(): Int = toByte().countTrailingZeroBits()\n\n/**\n * Returns a number having a single bit set in the position of the most significant set bit of this [UByte] number,\n * or zero, if this number is zero.\n *\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UByte.takeHighestOneBit(): UByte = toInt().takeHighestOneBit().toUByte()\n\n/**\n * Returns a number having a single bit set in the position of the least significant set bit of this [UByte] number,\n * or zero, if this number is zero.\n *\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UByte.takeLowestOneBit(): UByte = toInt().takeLowestOneBit().toUByte()\n\n/**\n * Rotates the binary representation of this [UByte] number left by the specified [bitCount] number of bits.\n * The most significant bits pushed out from the left side reenter the number as the least significant bits on the right side.\n *\n * Rotating the number left by a negative bit count is the same as rotating it right by the negated bit count:\n * `number.rotateLeft(-n) == number.rotateRight(n)`\n *\n * Rotating by a multiple of [UByte.SIZE_BITS] (8) returns the same number, or more generally\n * `number.rotateLeft(n) == number.rotateLeft(n % 8)`\n *\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UByte.rotateLeft(bitCount: Int): UByte = toByte().rotateLeft(bitCount).toUByte()\n\n/**\n * Rotates the binary representation of this [UByte] number right by the specified [bitCount] number of bits.\n * The least significant bits pushed out from the right side reenter the number as the most significant bits on the left side.\n *\n * Rotating the number right by a negative bit count is the same as rotating it left by the negated bit count:\n * `number.rotateRight(-n) == number.rotateLeft(n)`\n *\n * Rotating by a multiple of [UByte.SIZE_BITS] (8) returns the same number, or more generally\n * `number.rotateRight(n) == number.rotateRight(n % 8)`\n *\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UByte.rotateRight(bitCount: Int): UByte = toByte().rotateRight(bitCount).toUByte()\n\n/**\n * Counts the number of set bits in the binary representation of this [UShort] number.\n *\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UShort.countOneBits(): Int = toUInt().countOneBits()\n\n/**\n * Counts the number of consecutive most significant bits that are zero in the binary representation of this [UShort] number.\n *\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UShort.countLeadingZeroBits(): Int = toShort().countLeadingZeroBits()\n\n/**\n * Counts the number of consecutive least significant bits that are zero in the binary representation of this [UShort] number.\n *\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UShort.countTrailingZeroBits(): Int = toShort().countTrailingZeroBits()\n\n/**\n * Returns a number having a single bit set in the position of the most significant set bit of this [UShort] number,\n * or zero, if this number is zero.\n *\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun UShort.takeHighestOneBit(): UShort = toInt().takeHighestOneBit().toUShort()\n\n/**\n * Returns a number having a single bit set in the position of the least significant set bit of this [UShort] number,\n * or zero, if this number is zero.\n *\n*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly

```

```

y\npublic inline fun UShort.takeLowestOneBit(): UShort = toInt().takeLowestOneBit().toUShort()\n\n/**\n *
Rotates the binary representation of this [UShort] number left by the specified [bitCount] number of bits.\n * The
most significant bits pushed out from the left side reenter the number as the least significant bits on the right side.\n
*\n * Rotating the number left by a negative bit count is the same as rotating it right by the negated bit count:\n *
`number.rotateLeft(-n) == number.rotateRight(n)`\n * Rotating by a multiple of [UShort.SIZE_BITS] (16)
returns the same number, or more generally\n * `number.rotateLeft(n) == number.rotateLeft(n % 16)`\n
*\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly
y\npublic inline fun UShort.rotateLeft(bitCount: Int): UShort = toShort().rotateLeft(bitCount).toUShort()\n\n/**\n *
Rotates the binary representation of this [UShort] number right by the specified [bitCount] number of bits.\n * The
least significant bits pushed out from the right side reenter the number as the most significant bits on the left side.\n
*\n * Rotating the number right by a negative bit count is the same as rotating it left by the negated bit count:\n *
`number.rotateRight(-n) == number.rotateLeft(n)`\n * Rotating by a multiple of [UShort.SIZE_BITS] (16)
returns the same number, or more generally\n * `number.rotateRight(n) == number.rotateRight(n % 16)`\n
*\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly
y\npublic inline fun UShort.rotateRight(bitCount: Int): UShort = toShort().rotateRight(bitCount).toUShort()\n", "/*\n *
Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code
is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*\n @file:UseExperimental(ExperimentalUnsignedTypes::class)\n package kotlin.internal\n // (a - b) mod
c\n private fun differenceModulo(a: UInt, b: UInt, c: UInt): UInt {\n     val ac = a % c\n     val bc = b % c\n     return if
(ac >= bc) ac - bc else ac - bc + c\n }\n private fun differenceModulo(a: ULong, b: ULong, c: ULong): ULong {\n
val ac = a % c\n     val bc = b % c\n     return if (ac >= bc) ac - bc else ac - bc + c\n }\n\n /**\n * Calculates the final
element of a bounded arithmetic progression, i.e. the last element of the progression which is in the range\n * from
[start] to [end] in case of a positive [step], or from [end] to [start] in case of a negative\n * [step].\n * No
validation on passed parameters is performed. The given parameters should satisfy the condition:\n * - either
`step > 0` and `start <= end`,\n * - or `step < 0` and `start >= end`.\n * @param start first element of the
progression\n * @param end ending bound for the progression\n * @param step increment, or difference of
successive elements in the progression\n * @return the final element of the progression\n * @suppress\n
*\n @PublishedApi\n @SinceKotlin("1.3")\n internal fun getProgressionLastElement(start: UInt, end: UInt, step:
Int): UInt = when {\n     step > 0 -> if (start >= end) end else end - differenceModulo(end, start, step.toUInt())\n
step < 0 -> if (start <= end) end else end + differenceModulo(start, end, (-step).toUInt())\n     else -> throw
kotlin.IllegalArgumentException("Step is zero.")\n }\n\n /**\n * Calculates the final element of a bounded
arithmetic progression, i.e. the last element of the progression which is in the range\n * from [start] to [end] in case
of a positive [step], or from [end] to [start] in case of a negative\n * [step].\n * No validation on passed
parameters is performed. The given parameters should satisfy the condition:\n * - either `step > 0` and `start <=
end`,\n * - or `step < 0` and `start >= end`.\n * @param start first element of the progression\n * @param end
ending bound for the progression\n * @param step increment, or difference of successive elements in the
progression\n * @return the final element of the progression\n * @suppress\n
*\n @PublishedApi\n @SinceKotlin("1.3")\n internal fun getProgressionLastElement(start: ULong, end: ULong,
step: Long): ULong = when {\n     step > 0 -> if (start >= end) end else end - differenceModulo(end, start,
step.toULong())\n     step < 0 -> if (start <= end) end else end + differenceModulo(start, end, (-step).toULong())\n
else -> throw kotlin.IllegalArgumentException("Step is zero.")\n }\n", "/*\n * Copyright 2010-2018 JetBrains s.r.o.
and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license
that can be found in the license/LICENSE.txt file.\n *\n @file:kotlin.jvm.JvmName("UStringsKt") // string
representation of unsigned numbers\n package kotlin.text\n\n /**\n * Returns a string representation of this [Byte]
value in the specified [radix].\n * @throws IllegalArgumentException when [radix] is not a valid radix for
number to string conversion.\n
*\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n // @kotlin.internal.InlineOnly\n public /*inline*/ fun
UByte.toString(radix: Int): String = this.toInt().toString(radix)\n\n /**\n * Returns a string representation of this

```



[Short] value in the specified [radix].\n \* \n \* @throws IllegalArgumentException when [radix] is not a valid radix for number to string conversion.\n

```

*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n//@kotlin.internal.InlineOnly\npublic /*inline*/ fun
UShort.toString(radix: Int): String = this.toInt().toString(radix)\n\n/**\n * Returns a string representation of this
[Int] value in the specified [radix].\n * \n * @throws IllegalArgumentException when [radix] is not a valid radix for
number to string conversion.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n//@kotlin.internal.InlineOnly\npublic /*inline*/ fun
UInt.toString(radix: Int): String = this.toLong().toString(radix)\n\n/**\n * Returns a string representation of this
[Long] value in the specified [radix].\n * \n * @throws IllegalArgumentException when [radix] is not a valid radix
for number to string conversion.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
ULong.toString(radix: Int): String = ulongToString(this.toLong(), checkRadix(radix))\n\n/**\n * Parses the string
as a signed [UByte] number and returns the result.\n * @throws NumberFormatException if the string is not a valid
representation of a number.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
String.toUByte(): UByte = toUByteOrNull() ?: numberFormatError(this)\n\n/**\n * Parses the string as a signed
[UByte] number and returns the result.\n * @throws NumberFormatException if the string is not a valid
representation of a number.\n * @throws IllegalArgumentException when [radix] is not a valid radix for string to
number conversion.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun String.toUByte(radix:
Int): UByte = toUByteOrNull(radix) ?: numberFormatError(this)\n\n/**\n * Parses the string as a [UShort]
number and returns the result.\n * @throws NumberFormatException if the string is not a valid representation of a
number.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun String.toUShort(): UShort =
toUShortOrNull() ?: numberFormatError(this)\n\n/**\n * Parses the string as a [UShort] number and returns the
result.\n * @throws NumberFormatException if the string is not a valid representation of a number.\n * @throws
IllegalArgumentException when [radix] is not a valid radix for string to number conversion.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun String.toUShort(radix: Int): UShort =
toUShortOrNull(radix) ?: numberFormatError(this)\n\n/**\n * Parses the string as an [UInt] number and returns the
result.\n * @throws NumberFormatException if the string is not a valid representation of a number.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun String.toUInt(): UInt = toUIntOrNull() ?:
numberFormatError(this)\n\n/**\n * Parses the string as an [UInt] number and returns the result.\n * @throws
NumberFormatException if the string is not a valid representation of a number.\n * @throws
IllegalArgumentException when [radix] is not a valid radix for string to number conversion.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun String.toUInt(radix: Int): UInt =
toUIntOrNull(radix) ?: numberFormatError(this)\n\n/**\n * Parses the string as a [ULong] number and returns the
result.\n * @throws NumberFormatException if the string is not a valid representation of a number.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun String.toULong(): ULong =
toULongOrNull() ?: numberFormatError(this)\n\n/**\n * Parses the string as a [ULong] number and returns the
result.\n * @throws NumberFormatException if the string is not a valid representation of a number.\n * @throws
IllegalArgumentException when [radix] is not a valid radix for string to number conversion.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun String.toULong(radix: Int): ULong =
toULongOrNull(radix) ?: numberFormatError(this)\n\n/**\n * Parses the string as an [UByte] number and
returns the result\n * or `null` if the string is not a valid representation of a number.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun String.toUByteOrNull(): UByte? =
toUByteOrNull(radix = 10)\n\n/**\n * Parses the string as an [UByte] number and returns the result\n * or `null`
if the string is not a valid representation of a number.\n * \n * @throws IllegalArgumentException when [radix] is not a
valid radix for string to number conversion.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun String.toUByteOrNull(radix: Int): UByte? {
    val int = this.toUIntOrNull(radix) ?: return null\n    if (int >
UByte.MAX_VALUE) return null\n    return int.toUByte()\n}\n\n/**\n * Parses the string as an [UShort] number
and returns the result\n * or `null` if the string is not a valid representation of a number.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun String.toUShortOrNull(): UShort? =

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toUShortOrNull(radix = 10)\n\n/**\n * Parses the string as an [UShort] number and returns the result\n * or `null` if the string is not a valid representation of a number.\n * \n * @throws IllegalArgumentException when [radix] is not a valid radix for string to number conversion.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun String.toUShortOrNull(radix: Int): UShort? {\n    val int = this.toUIntOrNull(radix) ?: return null\n    if (int > UShort.MAX_VALUE) return null\n    return int.toUShort()\n}\n\n/**\n * Parses the string as an [UInt] number and returns the result\n * or `null` if the string is not a valid representation of a number.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun String.toUIntOrNull(): UInt? = toUIntOrNull(radix = 10)\n\n/**\n * Parses the string as an [UInt] number and returns the result\n * or `null` if the string is not a valid representation of a number.\n * \n * @throws IllegalArgumentException when [radix] is not a valid radix for string to number conversion.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun String.toUIntOrNull(radix: Int): UInt? {\n    checkRadix(radix)\n\n    val length = this.length\n    if (length == 0) return null\n\n    val limit: UInt = UInt.MAX_VALUE\n    val start: Int\n\n    val firstChar = this[0]\n    if (firstChar < '0') {\n        if (length == 1 || firstChar != '+') return null\n        start = 1\n    } else {\n        start = 0\n    }\n\n    val limitForMaxRadix = 119304647u // limit / 36\n    var limitBeforeMul = limitForMaxRadix\n    val uradix = radix.toUInt()\n    var result = 0u\n    for (i in start until length) {\n        val digit = digitOf(this[i], radix)\n\n        if (digit < 0) return null\n        if (result > limitBeforeMul) {\n            if (limitBeforeMul == limitForMaxRadix) {\n                limitBeforeMul = limit / uradix\n\n                if (result > limitBeforeMul) {\n                    return null\n                }\n            } else {\n                return null\n            }\n        }\n        result *= uradix\n        val beforeAdding = result\n        result += digit.toUInt()\n        if (result < beforeAdding) return null // overflow has happened\n    }\n    return result\n}\n\n/**\n * Parses the string as an [ULong] number and returns the result\n * or `null` if the string is not a valid representation of a number.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun String.toULongOrNull(): ULong? = toULongOrNull(radix = 10)\n\n/**\n * Parses the string as an [ULong] number and returns the result\n * or `null` if the string is not a valid representation of a number.\n * \n * @throws IllegalArgumentException when [radix] is not a valid radix for string to number conversion.\n */\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun String.toULongOrNull(radix: Int): ULong? {\n    checkRadix(radix)\n\n    val length = this.length\n    if (length == 0) return null\n\n    val limit: ULong = ULong.MAX_VALUE\n    val start: Int\n\n    val firstChar = this[0]\n    if (firstChar < '0') {\n        if (length == 1 || firstChar != '+') return null\n        start = 1\n    } else {\n        start = 0\n    }\n\n    val limitForMaxRadix = 512409557603043100uL // limit / 36\n    var limitBeforeMul = limitForMaxRadix\n    val uradix = radix.toULong()\n    var result = 0uL\n    for (i in start until length) {\n        val digit = digitOf(this[i], radix)\n\n        if (digit < 0) return null\n        if (result > limitBeforeMul) {\n            if (limitBeforeMul == limitForMaxRadix) {\n                limitBeforeMul = limit / uradix\n\n                if (result > limitBeforeMul) {\n                    return null\n                }\n            } else {\n                return null\n            }\n        }\n        result *= uradix\n        val beforeAdding = result\n        result += digit.toUInt()\n        if (result < beforeAdding) return null // overflow has happened\n    }\n    return result\n}\n"}\n\n/* Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\n@file:Suppress("INVISIBLE_REFERENCE", "INVISIBLE_MEMBER")\npackage kotlin\n\nimport kotlin.annotation.AnnotationTarget\n\nimport kotlin.internal.RequireKotlin\nimport kotlin.internal.RequireKotlinVersionKind\n\n/**\n * Marks the API that is dependent on the experimental unsigned types, including those types themselves.\n * \n * Usages of such API will be reported as warnings unless an explicit opt-in with\n * the [OptIn] annotation, e.g. `@OptIn(ExperimentalUnsignedTypes::class)`\n * or with the `-Xopt-in=kotlin.ExperimentalUnsignedTypes` compiler option is given.\n * \n * It's recommended to propagate the experimental status to the API that depends on unsigned types by annotating it with this annotation.\n */\n@Suppress("DEPRECATION")\n@Experimental(level = Experimental.Level.WARNING)\n@RequiresOptIn(level = RequiresOptIn.Level.WARNING)\n@MustBeDocumented\n@Target(CLASS, ANNOTATION_CLASS, PROPERTY, FIELD, LOCAL_VARIABLE, VALUE_PARAMETER, CONSTRUCTOR, FUNCTION, PROPERTY_GETTER, PROPERTY_SETTER,

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TYPEALIAS)\n@Retention(AnnotationRetention.BINARY)\n@RequireKotlin("1.2.50", versionKind =
RequireKotlinVersionKind.COMPILER_VERSION)\npublic annotation class ExperimentalUnsignedTypes\n"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code
is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*/\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("MathKt")\n\npackage
kotlin.math\n\n\n// constants, can't use them from nativeMath as they are not constants there\n\n/** Ratio of the
circumference of a circle to its diameter, approximately 3.14159. */\n@SinceKotlin("1.2")\npublic const val PI:
Double = 3.141592653589793\n\n/** Base of the natural logarithms, approximately 2.71828.
*/\n@SinceKotlin("1.2")\npublic const val E: Double = 2.718281828459045\n\n// region =====
Double Math =====\n\n/** Computes the sine of the angle [x]
given in radians.\n * \n * Special cases:\n * - `sin(NaN|+Inf|-Inf)` is `NaN`\n */\n@SinceKotlin("1.2")\npublic
expect fun sin(x: Double): Double\n\n/** Computes the cosine of the angle [x] given in radians.\n * \n * Special
cases:\n * - `cos(NaN|+Inf|-Inf)` is `NaN`\n */\n@SinceKotlin("1.2")\npublic expect fun cos(x: Double):
Double\n\n/** Computes the tangent of the angle [x] given in radians.\n * \n * Special cases:\n * - `tan(NaN|+Inf|-
Inf)` is `NaN`\n */\n@SinceKotlin("1.2")\npublic expect fun tan(x: Double): Double\n\n/** \n * Computes the arc
sine of the value [x];\n * the returned value is an angle in the range from `-PI/2` to `PI/2` radians.\n * \n * Special
cases:\n * - `asin(x)` is `NaN`, when `abs(x) > 1` or x is `NaN`\n */\n@SinceKotlin("1.2")\npublic expect fun
asin(x: Double): Double\n\n/** \n * Computes the arc cosine of the value [x];\n * the returned value is an angle in
the range from `0.0` to `PI` radians.\n * \n * Special cases:\n * - `acos(x)` is `NaN`, when `abs(x) > 1` or x is
`NaN`\n */\n@SinceKotlin("1.2")\npublic expect fun acos(x: Double): Double\n\n/** \n * Computes the arc tangent
of the value [x];\n * the returned value is an angle in the range from `-PI/2` to `PI/2` radians.\n * \n * Special
cases:\n * - `atan(NaN)` is `NaN`\n */\n@SinceKotlin("1.2")\npublic expect fun atan(x: Double): Double\n\n/** \n *
Returns the angle `theta` of the polar coordinates `(r, theta)` that correspond\n * to the rectangular coordinates `(x,
y)` by computing the arc tangent of the value [y] / [x];\n * the returned value is an angle in the range from `-PI` to
`PI` radians.\n * \n * Special cases:\n * - `atan2(0.0, 0.0)` is `0.0`\n * - `atan2(0.0, x)` is `0.0` for `x > 0` and `PI`
for `x < 0`\n * - `atan2(-0.0, x)` is `-0.0` for `x > 0` and `-PI` for `x < 0`\n * - `atan2(y, +Inf)` is `0.0` for `0 < y <
+Inf` and `-0.0` for `-Inf < y < 0`\n * - `atan2(y, -Inf)` is `PI` for `0 < y < +Inf` and `-PI` for `-Inf < y < 0`\n * -
`atan2(y, 0.0)` is `PI/2` for `y > 0` and `-PI/2` for `y < 0`\n * - `atan2(+Inf, x)` is `PI/2` for finite `x`\n * -
`atan2(-Inf, x)` is `-PI/2` for finite `x`\n * - `atan2(NaN, x)` and `atan2(y, NaN)` is `NaN`\n
*/\n@SinceKotlin("1.2")\npublic expect fun atan2(y: Double, x: Double): Double\n\n/** \n * Computes the
hyperbolic sine of the value [x].\n * \n * Special cases:\n * - `sinh(NaN)` is `NaN`\n * - `sinh(+Inf)` is `+Inf`\n *
- `sinh(-Inf)` is `-Inf`\n */\n@SinceKotlin("1.2")\npublic expect fun sinh(x: Double): Double\n\n/** \n * Computes
the hyperbolic cosine of the value [x].\n * \n * Special cases:\n * - `cosh(NaN)` is `NaN`\n * - `cosh(+Inf|-Inf)` is
`+Inf`\n */\n@SinceKotlin("1.2")\npublic expect fun cosh(x: Double): Double\n\n/** \n * Computes the hyperbolic
tangent of the value [x].\n * \n * Special cases:\n * - `tanh(NaN)` is `NaN`\n * - `tanh(+Inf)` is `1.0`\n * - `tanh(-
Inf)` is `-1.0`\n */\n@SinceKotlin("1.2")\npublic expect fun tanh(x: Double): Double\n\n/** \n * Computes the
inverse hyperbolic sine of the value [x].\n * \n * The returned value is `y` such that `sinh(y) == x`.\n * \n * Special
cases:\n * - `asinh(NaN)` is `NaN`\n * - `asinh(+Inf)` is `+Inf`\n * - `asinh(-Inf)` is `-Inf`\n
*/\n@SinceKotlin("1.2")\npublic expect fun asinh(x: Double): Double\n\n/** \n * Computes the inverse hyperbolic
cosine of the value [x].\n * \n * The returned value is positive `y` such that `cosh(y) == x`.\n * \n * Special
cases:\n * - `acosh(NaN)` is `NaN`\n * - `acosh(x)` is `NaN` when `x < 1`\n * - `acosh(+Inf)` is `+Inf`\n
*/\n@SinceKotlin("1.2")\npublic expect fun acosh(x: Double): Double\n\n/** \n * Computes the inverse hyperbolic
tangent of the value [x].\n * \n * The returned value is `y` such that `tanh(y) == x`.\n * \n * Special
cases:\n * - `atanh(NaN)` is `NaN`\n * - `atanh(x)` is `NaN` when `x > 1` or `x < -1`\n * - `atanh(1.0)` is `+Inf`\n * - `atanh(-
1.0)` is `-Inf`\n */\n@SinceKotlin("1.2")\npublic expect fun atanh(x: Double): Double\n\n/** \n * Computes
`sqrt(x^2 + y^2)` without intermediate overflow or underflow.\n * \n * Special cases:\n * - returns `+Inf` if any of
arguments is infinite\n * - returns `NaN` if any of arguments is `NaN` and the other is not infinite\n
*/\n@SinceKotlin("1.2")\npublic expect fun hypot(x: Double, y: Double): Double\n\n/** \n * Computes the

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positive square root of the value [x].  
 Special cases:  $\sqrt{x}$  is NaN when  $x < 0$  or  $x$  is NaN  
 @SinceKotlin("1.2")\npublic expect fun sqrt(x: Double): Double  
 Computes Euler's number  $e$  raised to the power of the value [x].  
 Special cases:  $\exp(\text{NaN})$  is NaN  $\exp(+\text{Inf})$  is  $+\text{Inf}$   $\exp(-\text{Inf})$  is  $0.0$   
 @SinceKotlin("1.2")\npublic expect fun exp(x: Double): Double  
 Computes  $\exp(x) - 1$ . This function can be implemented to produce more precise result for [x] near zero.  
 Special cases:  $\text{expm1}(\text{NaN})$  is NaN  $\text{expm1}(+\text{Inf})$  is  $+\text{Inf}$   $\text{expm1}(-\text{Inf})$  is  $-1.0$   
 @see [exp] function.  
 @SinceKotlin("1.2")\npublic expect fun expm1(x: Double): Double  
 Computes the logarithm of the value [x] to the given [base].  
 Special cases:  $\log(x, b)$  is NaN if either  $x$  or  $b$  are NaN  $\log(x, b)$  is NaN when  $x < 0$  or  $b \leq 0$  or  $b == 1.0$   $\log(+\text{Inf}, +\text{Inf})$  is NaN  $\log(+\text{Inf}, b)$  is  $+\text{Inf}$  for  $b > 1$  and  $-\text{Inf}$  for  $b < 1$   $\log(0.0, b)$  is  $-\text{Inf}$  for  $b > 1$  and  $+\text{Inf}$  for  $b > 1$   
 See also logarithm functions for common fixed bases: [ln], [log10] and [log2].  
 @SinceKotlin("1.2")\npublic expect fun log(x: Double, base: Double): Double  
 Computes the natural logarithm (base  $E$ ) of the value [x].  
 Special cases:  $\ln(\text{NaN})$  is NaN  $\ln(x)$  is NaN when  $x < 0.0$   $\ln(+\text{Inf})$  is  $+\text{Inf}$   $\ln(0.0)$  is  $-\text{Inf}$   
 @SinceKotlin("1.2")\npublic expect fun ln(x: Double): Double  
 Computes the common logarithm (base 10) of the value [x].  
 @see [ln] function for special cases.  
 @SinceKotlin("1.2")\npublic expect fun log10(x: Double): Double  
 Computes the binary logarithm (base 2) of the value [x].  
 @see [ln] function for special cases.  
 @SinceKotlin("1.2")\npublic expect fun log2(x: Double): Double  
 Computes  $\ln(x + 1)$ . This function can be implemented to produce more precise result for [x] near zero.  
 Special cases:  $\ln1p(\text{NaN})$  is NaN  $\ln1p(x)$  is NaN where  $x < -1.0$   $\ln1p(-1.0)$  is  $-\text{Inf}$   $\ln1p(+\text{Inf})$  is  $+\text{Inf}$   
 @see [ln] function @see [expm1] function  
 @SinceKotlin("1.2")\npublic expect fun ln1p(x: Double): Double  
 Rounds the given value [x] to an integer towards positive infinity.  
 @return the smallest double value that is greater than or equal to the given value [x] and is a mathematical integer.  
 Special cases:  $\text{ceil}(x)$  is  $x$  where  $x$  is NaN or  $+\text{Inf}$  or  $-\text{Inf}$  or already a mathematical integer.  
 @SinceKotlin("1.2")\npublic expect fun ceil(x: Double): Double  
 Rounds the given value [x] to an integer towards negative infinity.  
 @return the largest double value that is smaller than or equal to the given value [x] and is a mathematical integer.  
 Special cases:  $\text{floor}(x)$  is  $x$  where  $x$  is NaN or  $+\text{Inf}$  or  $-\text{Inf}$  or already a mathematical integer.  
 @SinceKotlin("1.2")\npublic expect fun floor(x: Double): Double  
 Rounds the given value [x] to an integer towards zero.  
 @return the value [x] having its fractional part truncated.  
 Special cases:  $\text{truncate}(x)$  is  $x$  where  $x$  is NaN or  $+\text{Inf}$  or  $-\text{Inf}$  or already a mathematical integer.  
 @SinceKotlin("1.2")\npublic expect fun truncate(x: Double): Double  
 Rounds the given value [x] towards the closest integer with ties rounded towards even integer.  
 Special cases:  $\text{round}(x)$  is  $x$  where  $x$  is NaN or  $+\text{Inf}$  or  $-\text{Inf}$  or already a mathematical integer.  
 @SinceKotlin("1.2")\npublic expect fun round(x: Double): Double  
 Returns the absolute value of the given value [x].  
 Special cases:  $\text{abs}(\text{NaN})$  is NaN  
 @see absoluteValue extension property for [Double]  
 @SinceKotlin("1.2")\npublic expect fun abs(x: Double): Double  
 Returns the sign of the given value [x]:  $-1.0$  if the value is negative,  $0$  if the value is zero,  $1.0$  if the value is positive  
 Special case:  $\text{sign}(\text{NaN})$  is NaN  
 @SinceKotlin("1.2")\npublic expect fun sign(x: Double): Double  
 Returns the smaller of two values.  
 If either value is NaN, then the result is NaN.  
 @SinceKotlin("1.2")\npublic expect fun min(a: Double, b: Double): Double  
 Returns the greater of two values.  
 If either value is NaN, then the result is NaN.  
 @SinceKotlin("1.2")\npublic expect fun max(a: Double, b: Double): Double  
 Raises this value to the power [x].  
 Special cases:  $b.\text{pow}(0.0)$  is  $1.0$   $b.\text{pow}(1.0) == b$   $b.\text{pow}(\text{NaN})$  is NaN  $\text{NaN}.\text{pow}(x)$  is NaN for  $x != 0.0$   $b.\text{pow}(\text{Inf})$  is NaN for  $\text{abs}(b) == 1.0$   $b.\text{pow}(x)$  is NaN for  $b < 0$  and  $x$  is finite and not an integer  
 @SinceKotlin("1.2")\npublic expect fun Double.pow(x: Double): Double  
 Raises this value to the integer power [n].  
 See the other overload of [pow] for details.  
 @SinceKotlin("1.2")\npublic expect fun Double.pow(n: Int): Double  
 Returns the absolute value of this value.  
 Special cases:  $\text{NaN}.\text{absoluteValue}$  is

`NaN`  
`* @see abs function`  
`SinceKotlin("1.2")`  
`public expect val Double.absoluteValue:`  
`Double`  
`/**`  
 `* Returns the sign of this value:`  
 `* -  $-1.0$  if the value is negative,`  
 `* - zero if the value is`  
 `zero,`  
 `* -  $1.0$  if the value is positive`  
 `* Special case:`  
 `* - NaN.sign is NaN`  
`SinceKotlin("1.2")`  
`public expect val Double.sign: Double`  
`/**`  
 `* Returns this value with the sign bit`  
 `same as of the [sign] value.`  
 `* If [sign] is NaN the sign of the result is undefined.`  
`SinceKotlin("1.2")`  
`public expect fun Double.withSign(sign: Double): Double`  
`/**`  
 `* Returns this value`  
 `with the sign bit same as of the [sign] value.`  
`SinceKotlin("1.2")`  
`public expect fun Double.withSign(sign:`  
 `Int): Double`  
`/**`  
 `* Returns the ulp (unit in the last place) of this value.`  
 `* An ulp is a positive distance`  
 `between this value and the next nearest [Double] value larger in magnitude.`  
 `* Special Cases:`  
 `* - NaN.ulp`  
 `is NaN`  
 `* - x.ulp is +Inf when x is +Inf or -Inf`  
 `* - 0.0.ulp is Double.MIN_VALUE`  
`SinceKotlin("1.2")`  
`public expect val Double.ulp: Double`  
`/**`  
 `* Returns the [Double] value nearest to`  
 `this value in direction of positive infinity.`  
`SinceKotlin("1.2")`  
`public expect fun Double.nextUp():`  
 `Double`  
`/**`  
 `* Returns the [Double] value nearest to this value in direction of negative infinity.`  
`SinceKotlin("1.2")`  
`public expect fun Double.nextDown(): Double`  
`/**`  
 `* Returns the [Double] value`  
 `nearest to this value in direction from this value towards the value [to].`  
 `* Special cases:`  
 `* -`  
 `x.nextTowards(y) is NaN if either x or y are NaN`  
 `* - x.nextTowards(x) == x`  
`SinceKotlin("1.2")`  
`public expect fun Double.nextTowards(to: Double): Double`  
`/**`  
 `* Rounds this`  
 `[Double] value to the nearest integer and converts the result to [Int].`  
 `* Ties are rounded towards positive infinity.`  
 `* Special cases:`  
 `* - x.roundToInt() == Int.MAX_VALUE when x > Int.MAX_VALUE`  
 `* -`  
 `x.roundToInt() == Int.MIN_VALUE when x < Int.MIN_VALUE`  
 `* @throws IllegalArgumentException`  
 `when this value is NaN`  
`SinceKotlin("1.2")`  
`public expect fun Double.roundToInt(): Int`  
`/**`  
 `* Rounds this [Double] value to the nearest integer and converts the result to [Long].`  
 `* Ties are rounded towards`  
 `positive infinity.`  
 `* Special cases:`  
 `* - x.roundToLong() == Long.MAX_VALUE when x >`  
 `Long.MAX_VALUE`  
 `* - x.roundToLong() == Long.MIN_VALUE when x < Long.MIN_VALUE`  
 `* @throws IllegalArgumentException when this value is NaN`  
`SinceKotlin("1.2")`  
`public expect fun`  
 `Double.roundToLong(): Long`  
`// endregion`  
`// region ===== Float Math`  
`=====`  
`/**`  
 `* Computes the sine of the angle [x] given in`  
 `radians.`  
 `* Special cases:`  
 `* - sin(NaN|+Inf|-Inf) is NaN`  
`SinceKotlin("1.2")`  
`public expect fun`  
 `sin(x: Float): Float`  
`/**`  
 `* Computes the cosine of the angle [x] given in radians.`  
 `* Special cases:`  
 `* -`  
 `cos(NaN|+Inf|-Inf) is NaN`  
`SinceKotlin("1.2")`  
`public expect fun cos(x: Float): Float`  
`/**`  
 `* Computes`  
 `the tangent of the angle [x] given in radians.`  
 `* Special cases:`  
 `* - tan(NaN|+Inf|-Inf) is NaN`  
`SinceKotlin("1.2")`  
`public expect fun tan(x: Float): Float`  
`/**`  
 `* Computes the arc sine of the value`  
 `[x];`  
 `* the returned value is an angle in the range from  $-\pi/2$  to  $\pi/2$  radians.`  
 `* Special cases:`  
 `* -`  
 `asin(x) is NaN, when abs(x) > 1 or x is NaN`  
`SinceKotlin("1.2")`  
`public expect fun asin(x: Float):`  
 `Float`  
`/**`  
 `* Computes the arc cosine of the value [x];`  
 `* the returned value is an angle in the range from  $0.0$`   
 `to  $\pi$  radians.`  
 `* Special cases:`  
 `* - acos(x) is NaN, when abs(x) > 1 or x is NaN`  
`SinceKotlin("1.2")`  
`public expect fun acos(x: Float): Float`  
`/**`  
 `* Computes the arc tangent of the value`  
 `[x];`  
 `* the returned value is an angle in the range from  $-\pi/2$  to  $\pi/2$  radians.`  
 `* Special cases:`  
 `* -`  
 `atan(NaN) is NaN`  
`SinceKotlin("1.2")`  
`public expect fun atan(x: Float): Float`  
`/**`  
 `* Returns the`  
 `angle theta of the polar coordinates (r, theta) that correspond`  
 `* to the rectangular coordinates (x, y) by`  
 `computing the arc tangent of the value y / [x];`  
 `* the returned value is an angle in the range from  $-\pi$  to  $\pi$`   
 `radians.`  
 `* Special cases:`  
 `* - atan2(0.0, 0.0) is 0.0`  
 `* - atan2(0.0, x) is 0.0 for x > 0 and  $\pi$  for`  
 `x < 0`  
 `* - atan2(-0.0, x) is -0.0 for x > 0 and  $-\pi$  for x < 0`  
 `* - atan2(y, +Inf) is 0.0 for  $0 < y <$`   
 `+Inf and -0.0 for  $-\text{Inf} < y < 0$`   
 `* - atan2(y, -Inf) is  $\pi$  for  $0 < y < +\text{Inf}$  and  $-\pi$  for  $-\text{Inf} < y < 0$`   
 `* -`  
 `atan2(y, 0.0) is  $\pi/2$  for y > 0 and  $-\pi/2$  for y < 0`  
 `* - atan2(+Inf, x) is  $\pi/2$  for finite x`  
 `* -`  
 `atan2(-Inf, x) is  $-\pi/2$  for finite x`  
 `* - atan2(NaN, x) and atan2(y, NaN) is NaN`  
`SinceKotlin("1.2")`  
`public expect fun atan2(y: Float, x: Float): Float`  
`/**`  
 `* Computes the hyperbolic`  
 `sine of the value [x].`  
 `* Special cases:`  
 `* - sinh(NaN) is NaN`  
 `* - sinh(+Inf) is +Inf`  
 `* - sinh(-`

`Inf)` is `-Inf`

`@SinceKotlin("1.2")`

`public expect fun sinh(x: Float): Float`

Computes the hyperbolic cosine of the value `[x]`.

Special cases:

- `cosh(NaN)` is `NaN`
- `cosh(+Inf)` is `+Inf`
- `cosh(-Inf)` is `-Inf`

`@SinceKotlin("1.2")`

`public expect fun cosh(x: Float): Float`

Computes the hyperbolic tangent of the value `[x]`.

Special cases:

- `tanh(NaN)` is `NaN`
- `tanh(+Inf)` is `1.0`
- `tanh(-Inf)` is `-1.0`

`@SinceKotlin("1.2")`

`public expect fun tanh(x: Float): Float`

Computes the inverse hyperbolic sine of the value `[x]`.

The returned value is `y` such that `sinh(y) == x`.

Special cases:

- `asinh(NaN)` is `NaN`
- `asinh(+Inf)` is `+Inf`
- `asinh(-Inf)` is `-Inf`

`@SinceKotlin("1.2")`

`public expect fun asinh(x: Float): Float`

Computes the inverse hyperbolic cosine of the value `[x]`.

The returned value is positive `y` such that `cosh(y) == x`.

Special cases:

- `acosh(NaN)` is `NaN`
- `acosh(x)` is `NaN` when `x < 1`
- `acosh(+Inf)` is `+Inf`

`@SinceKotlin("1.2")`

`public expect fun acosh(x: Float): Float`

Computes the inverse hyperbolic tangent of the value `[x]`.

The returned value is `y` such that `tanh(y) == x`.

Special cases:

- `tanh(NaN)` is `NaN`
- `tanh(x)` is `NaN` when `x > 1` or `x < -1`
- `tanh(1.0)` is `+Inf`
- `tanh(-1.0)` is `-Inf`

`@SinceKotlin("1.2")`

`public expect fun atanh(x: Float): Float`

Computes `sqrt(x^2 + y^2)` without intermediate overflow or underflow.

Special cases:

- returns `+Inf` if any of arguments is infinite
- returns `NaN` if any of arguments is `NaN` and the other is not infinite

`@SinceKotlin("1.2")`

`public expect fun hypot(x: Float, y: Float): Float`

Computes the positive square root of the value `[x]`.

Special cases:

- `sqrt(x)` is `NaN` when `x < 0` or `x` is `NaN`

`@SinceKotlin("1.2")`

`public expect fun sqrt(x: Float): Float`

Computes Euler's number `e` raised to the power of the value `[x]`.

Special cases:

- `exp(NaN)` is `NaN`
- `exp(+Inf)` is `+Inf`
- `exp(-Inf)` is `0.0`

`@SinceKotlin("1.2")`

`public expect fun exp(x: Float): Float`

Computes `exp(x)`.

This function can be implemented to produce more precise result for `[x]` near zero.

Special cases:

- `expm1(NaN)` is `NaN`
- `expm1(+Inf)` is `+Inf`
- `expm1(-Inf)` is `-1.0`

@see `[exp]` function.

`@SinceKotlin("1.2")`

`public expect fun expm1(x: Float): Float`

Computes the logarithm of the value `[x]` to the given `[base]`.

Special cases:

- `log(x, b)` is `NaN` if either `x` or `b` are `NaN`
- `log(x, b)` is `NaN` when `x < 0` or `b <= 0` or `b == 1.0`
- `log(+Inf, +Inf)` is `NaN`
- `log(+Inf, b)` is `+Inf` for `b > 1` and `-Inf` for `b < 1`
- `log(0.0, b)` is `-Inf` for `b > 1` and `+Inf` for `b > 1`

See also logarithm functions for common fixed bases: `[ln]`, `[log10]` and `[log2]`.

`@SinceKotlin("1.2")`

`public expect fun log(x: Float, base: Float): Float`

Computes the natural logarithm (base 'E') of the value `[x]`.

Special cases:

- `ln(NaN)` is `NaN`
- `ln(x)` is `NaN` when `x < 0.0`
- `ln(+Inf)` is `+Inf`
- `ln(0.0)` is `-Inf`

`@SinceKotlin("1.2")`

`public expect fun ln(x: Float): Float`

Computes the common logarithm (base 10) of the value `[x]`.

@see `[ln]` function for special cases.

`@SinceKotlin("1.2")`

`public expect fun log10(x: Float): Float`

Computes the binary logarithm (base 2) of the value `[x]`.

@see `[ln]` function for special cases.

`@SinceKotlin("1.2")`

`public expect fun log2(x: Float): Float`

Computes `ln(a + 1)`.

This function can be implemented to produce more precise result for `[x]` near zero.

Special cases:

- `ln1p(NaN)` is `NaN`
- `ln1p(x)` is `NaN` where `x < -1.0`
- `ln1p(-1.0)` is `-Inf`
- `ln1p(+Inf)` is `+Inf`

@see `[ln]` function

@see `[expm1]` function

`@SinceKotlin("1.2")`

`public expect fun ln1p(x: Float): Float`

Rounds the given value `[x]` to an integer towards positive infinity.

@return the smallest `Float` value that is greater than or equal to the given value `[x]` and is a mathematical integer.

Special cases:

- `ceil(x)` is `x` where `x` is `NaN` or `+Inf` or `-Inf` or already a mathematical integer.

`@SinceKotlin("1.2")`

`public expect fun ceil(x: Float): Float`

Rounds the given value `[x]` to an integer towards negative infinity.

@return the largest `Float` value that is smaller than or equal to the given value `[x]` and is a mathematical integer.

Special cases:

- `floor(x)` is `x` where `x` is `NaN` or `+Inf` or `-Inf` or already a mathematical integer.

`@SinceKotlin("1.2")`

`public expect fun floor(x: Float): Float`

Rounds the given value `[x]` to an integer towards zero.

@return the value `[x]` having its fractional part truncated.

Special cases:

- `truncate(x)` is `x` where `x` is `NaN` or `+Inf` or `-Inf` or already a mathematical integer.

`@SinceKotlin("1.2")`

`public expect fun truncate(x: Float): Float`

Rounds the given value `[x]`

towards the closest integer with ties rounded towards even integer.  
`round(x)` is `x` where `x` is `NaN` or `+Inf` or `-Inf` or already a mathematical integer.  
`fun round(x: Float): Float` Returns the absolute value of the given value `[x]`.  
Special cases:  
`abs(NaN)` is `NaN`  
@see `absoluteValue` extension property for `[Float]`  
`fun abs(x: Float): Float` Returns the sign of the given value `[x]`:  
`-1.0` if the value is negative,  
`0` if the value is zero,  
`1.0` if the value is positive  
Special case:  
`sign(NaN)` is `NaN`  
`fun sign(x: Float): Float` Returns the smaller of two values.  
If either value is `NaN`, then the result is `NaN`.  
`fun min(a: Float, b: Float): Float` Returns the greater of two values.  
If either value is `NaN`, then the result is `NaN`.  
`fun max(a: Float, b: Float): Float` Raises this value to the power `[x]`.  
Special cases:  
`b.pow(0.0)` is `1.0`  
`b.pow(1.0)` == `b`  
`b.pow(NaN)` is `NaN`  
`NaN.pow(x)` is `NaN` for `x != 0.0`  
`b.pow(Inf)` is `NaN` for `abs(b) == 1.0`  
`b.pow(x)` is `NaN` for `b < 0` and `x` is finite and not an integer  
`fun Float.pow(x: Float): Float` Raises this value to the integer power `[n]`.  
See the other overload of `[pow]` for details.  
`fun Float.pow(n: Int): Float` Returns the absolute value of this value.  
Special cases:  
`NaN.absoluteValue` is `NaN`  
@see `abs` function  
`val Float.absoluteValue: Float` Returns the sign of this value:  
`-1.0` if the value is negative,  
`0` if the value is zero,  
`1.0` if the value is positive  
Special case:  
`NaN.sign` is `NaN`  
`val Float.sign: Float` Returns this value with the sign bit same as of the `[sign]` value.  
If `[sign]` is `NaN` the sign of the result is undefined.  
`fun Float.withSign(sign: Float): Float` Returns this value with the sign bit same as of the `[sign]` value.  
`fun Float.withSign(sign: Int): Float` Rounds this `[Float]` value to the nearest integer and converts the result to `[Int]`.  
Ties are rounded towards positive infinity.  
Special cases:  
`x.roundToInt() == Int.MAX_VALUE` when `x > Int.MAX_VALUE`  
`x.roundToInt() == Int.MIN_VALUE` when `x < Int.MIN_VALUE`  
@throws `IllegalArgumentException` when this value is `NaN`  
`fun Float.roundToInt(): Int` Rounds this `[Float]` value to the nearest integer and converts the result to `[Long]`.  
Ties are rounded towards positive infinity.  
Special cases:  
`x.roundToLong() == Long.MAX_VALUE` when `x > Long.MAX_VALUE`  
`x.roundToLong() == Long.MIN_VALUE` when `x < Long.MIN_VALUE`  
@throws `IllegalArgumentException` when this value is `NaN`  
`fun Float.roundToLong(): Long` `endregion`  
===== `Integer Math` =====  
Returns the absolute value of the given value `[n]`.  
Special cases:  
`abs(Int.MIN_VALUE)` is `Int.MIN_VALUE` due to an overflow  
@see `absoluteValue` extension property for `[Int]`  
`fun abs(n: Int): Int` Returns the smaller of two values.  
`fun min(a: Int, b: Int): Int` Returns the greater of two values.  
`fun max(a: Int, b: Int): Int` Returns the absolute value of this value.  
Special cases:  
`Int.MIN_VALUE.absoluteValue` is `Int.MIN_VALUE` due to an overflow  
@see `abs` function  
`val Int.absoluteValue: Int` Returns the sign of this value:  
`-1` if the value is negative,  
`0` if the value is zero,  
`1` if the value is positive  
`val Int.sign: Int` Returns the absolute value of the given value `[n]`.  
Special cases:  
`abs(Long.MIN_VALUE)` is `Long.MIN_VALUE` due to an overflow  
@see `absoluteValue` extension property for `[Long]`  
`fun abs(n: Long): Long` Returns the smaller of two values.  
`fun min(a: Long, b: Long): Long` Returns the greater of two values.  
`fun max(a: Long, b: Long): Long` Returns the absolute value of this value.  
Special cases:  
`Long.MIN_VALUE.absoluteValue` is `Long.MIN_VALUE` due to an overflow  
@see `abs` function

```

*\n@SinceKotlin("1.2")\npublic expect val Long.absoluteValue: Long\n\n/**\n * Returns the sign of this value:\n * - `1` if the value is negative,\n * - `0` if the value is zero,\n * - `1` if the value is positive\n */\n\n*\n@SinceKotlin("1.2")\npublic expect val Long.sign: Int\n\n\n//
endregion\n",null,null,null,null,null,null,null,null,null], "names": [], "mappings": "AAWC,CAXA,yB;EACG,IAAI,OA
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AAU,sBAAV,WAAmB,IAAnB,CAAJ,C;;QajHhB,OAkHO,W;O;KazHX,C;4FAUA,yB;MAAA,gE;MAAA,uC;Q  
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SAoHpB,EAAU,cAAV,EAAU,sBAAV,WAAmB,IAAnB,CAAJ,C;;QApHhB,OAqHO,W;O;KA5HX,C;4FAUA,yB  
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ACI,WAAAY,WAvHwB,SAuHpB,EAAU,cAAV,EAAU,sBAAV,WAAmB,IAAnB,CAAJ,C;;QAvHhB,OAwhO,W;  
O;KA/HX,C;4FAUA,yB;MAAA,gE;MAAA,uC;QAOW,kBAAa,eAAa,gBAAb,C;QaYHP,gB;QADb,YAAAY,C;QA  
CZ,iD;UAAa,WAAb,e;UACI,WAAAY,WA1HwB,SA0HpB,EAAU,cAAV,EAAU,sBAAV,WAAmB,IAAnB,CAAJ,  
C;;QA1HhB,OA2HO,W;O;KAIIX,C;4FAUA,yB;MAAA,gE;MAAA,uC;QAOW,kBAAa,eAAa,gBAAb,C;QA4HP,  
gB;QADb,YAAAY,C;QACZ,iD;UAAa,WAAb,e;UACI,WAAAY,WA7HwB,SA6HpB,EAAU,cAAV,EAAU,sBAAV,  
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Y,C;MACZ,wBAAa,SAAb,gB;QAAa,WAAA,SAAb,M;QACI,WAAY,WAAI,WAAU,cAAV,EAAU,sBAAV,WA  
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Y,C;MACZ,wBAAa,SAAb,gB;QAAa,WAAA,SAAb,M;QACI,WAAY,WAAI,WAAU,cAAV,EAAU,sBAAV,WA  
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,gB;QAAa,WAAA,SAAb,M;QACI,WAAY,WAAI,UAAU,IAAV,CAAJ,C;;MACHB,OAAO,W;K;kFAGX,6C;MA  
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hB,OAAO,W;K;kFAGX,6C;MAKiB,Q;MAAb,wBAAa,SAAb,gB;QAAa,WAAA,SAAb,M;QACI,WAAY,WAAI,  
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,CAAe,C;K;IAG/B,+B;MAQI,OAA2B,SAAf,eAAL,SAAK,CAAe,C;K;IAG/B,+B;MAQI,OAA2B,SAAf,eAAL,  
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AI, WAAI, iBAAJ, C,; MACvB, OAAO, G; K; IAGX, iC; MAUI, UAAe, aAAL, SAAK, C; MACX, OAAJ, GAAI, EAAO, K  
AAP, C; MACJ, OAAO, G; K; IAGX, mC; MAUI, UAAe, eAAL, SAAK, C; MACX, OAAJ, GAAI, EAAO, KAAP, C; MACJ  
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UI, UAAe, eAAL, SAAK, C; MACX, OAAJ, GAAI, EAAO, KAAP, C; MACJ, OAAO, G; K; IAGX, mC; MAUI, UAAe, eAA  
L, SAAK, C; MACX, OAAJ, GAAI, EAAO, KAAP, C; MACJ, OAAO, G; K; IAGX, mC; MAUI, UAAe, eAAL, SAAK, C; M  
ACX, OAAJ, GAAI, EAAO, KAAP, C; MACJ, OAAO, G; K; IAGX, mC; MAUI, UAAe, eAAL, SAAK, C; MACX, OAAJ, G  
AAI, EAAO, KAAP, C; MACJ, OAAO, G; K; IAGX, mC; MAUI, UAAe, eAAL, SAAK, C; MACX, OAAJ, GAAI, EAAO, K  
AAP, C; MACJ, OAAO, G; K; 4EAGX, gC; MAMoB, Q; MAAhB, wBAAgB, SAAhB, gB; QAAgB, cAAA, SAAhB, M; QA  
AsB, IAAI, CAAC, UAAU, OAAV, CAAL, C; UAAyB, OAAO, K,; MACtD, OAAO, I; K; 8EAGX, gC; MAMoB, Q; MAAh  
B, wBAAgB, SAAhB, gB; QAAgB, cAAA, SAAhB, M; QAAsB, IAAI, CAAC, UAAU, OAAV, CAAL, C; UAAyB, OAAO  
, K,; MACtD, OAAO, I; K; 8EAGX, gC; MAMoB, Q; MAAhB, wBAAgB, SAAhB, gB; QAAgB, cAAA, SAAhB, M; QAAs  
B, IAAI, CAAC, UAAU, OAAV, CAAL, C; UAAyB, OAAO, K,; MACtD, OAAO, I; K; 8EAGX, gC; MAMoB, Q; MAAhB,  
wBAAgB, SAAhB, gB; QAAgB, cAAA, SAAhB, M; QAAsB, IAAI, CAAC, UAAU, OAAV, CAAL, C; UAAyB, OAAO, K  
,; MACtD, OAAO, I; K; 8EAGX, gC; MAMoB, Q; MAAhB, wBAAgB, SAAhB, gB; QAAgB, cAAA, SAAhB, M; QAAsB, I  
AAI, CAAC, UAAU, OAAV, CAAL, C; UAAyB, OAAO, K,; MACtD, OAAO, I; K; 8EAGX, gC; MAMoB, Q; MAAhB, wB  
AAgB, SAAhB, gB; QAAgB, cAAA, SAAhB, M; QAAsB, IAAI, CAAC, UAAU, OAAV, CAAL, C; UAAyB, OAAO, K,; M  
ACtD, OAAO, I; K; 8EAGX, gC; MAMoB, Q; MAAhB, wBAAgB, SAAhB, gB; QAAgB, cAAA, SAAhB, M; QAAsB, IAAI  
, CAAC, UAAU, OAAV, CAAL, C; UAAyB, OAAO, K,; MACtD, OAAO, I; K; 8EAGX, gC; MAMoB, Q; MAAhB, wBAAg  
B, SAAhB, gB; QAAgB, cAAA, SAAhB, M; QAAsB, IAAI, CAAC, UAAU, OAAV, CAAL, C; UAAyB, OAAO, K,; MACt  
D, OAAO, I; K; 8EAGX, yB; MAAA, oC; MAAA, gC; MAAA, uC; QAMoB, Q; QAAhB, wBAAgB, SAAhB, gB; UAAgB, c  
AAhB, UAAgB, SAAhB, O; UAAAsB, IAAI, CAAC, UAAU, oBAAV, CAAL, C; YAAyB, OAAO, K,; QACtD, OAAO, I; O;  
KAPX, C; IAUA, wB; MAMI, OAAO, EApuHA, qBAAQ, CAouHR, C; K; IAGX, 0B; MAMI, OAAO, EAruHA, qBAAQ, C  
AquHR, C; K; IAGX, 0B; MAMI, OAAO, EAruHA, qBAAQ, CAouHR, C; K; IAGX, 0B; MAMI, OAAO, EAruHA, qBAAQ  
, CAuuHR, C; K; IAGX, 0B; MAMI, OAAO, EAruHA, qBAAQ, CAwuHR, C; K; IAGX, 0B; MAMI, OAAO, EAruHA, qBA  
AQ, CAyuHR, C; K; IAGX, 0B; MAMI, OAAO, EA1uHA, qBAAQ, CA0uHR, C; K; IAGX, 0B; MAMI, OAAO, EA3uHA, q  
BAAQ, CA2uHR, C; K; IAGX, 0B; MAMI, OAAO, EA5uHA, qBAAQ, CA4uHR, C; K; 8EAGX, gC; MAMoB, Q; MAAhB,  
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D, OAAO, K; K; 8EAGX, gC; MAMoB, Q; MAAhB, wBAAgB, SAAhB, gB; QAAgB, cAAA, SAAhB, M; QAAsB, IAAI, U  
AAU, OAAV, CAAJ, C; UAAwB, OAAO, I,; MACrD, OAAO, K; K; +EAGX, gC; MAMoB, Q; MAAhB, wBAAgB, SAAh  
B, gB; QAAgB, cAAA, SAAhB, M; QAAsB, IAAI, UAAU, OAAV, CAAJ, C; UAAwB, OAAO, I,; MACrD, OAAO, K; K; +  
EAGX, gC; MAMoB, Q; MAAhB, wBAAgB, SAAhB, gB; QAAgB, cAAA, SAAhB, M; QAAsB, IAAI, UAAU, OAAV, CA  
AJ, C; UAAwB, OAAO, I,; MACrD, OAAO, K; K; +EAGX, gC; MAMoB, Q; MAAhB, wBAAgB, SAAhB, gB; QAAgB, cA  
AA, SAAhB, M; QAAsB, IAAI, UAAU, OAAV, CAAJ, C; UAAwB, OAAO, I,; MACrD, OAAO, K; K; +EAGX, gC; MAMo  
B, Q; MAAhB, wBAAgB, SAAhB, gB; QAAgB, cAAA, SAAhB, M; QAAsB, IAAI, UAAU, OAAV, CAAJ, C; UAAwB, O  
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hB, UAAgB, SAAhB, O; UAAAsB, IAAI, UAAU, oBAAV, CAAJ, C; YAAwB, OAAO, I,; QACrD, OAAO, K; O; KAPX, C; g  
FAUA, qB; MAKI, OAAO, gB; K; kFAGX, qB; MAKI, OAAO, gB; K; kFAGX, qB; MAKI, OAAO, gB; K; kFAGX, qB; MA  
KI, OAAO, gB; K; kFAGX, qB; MAKI, OAAO, gB; K; kFAGX, qB; MAKI, OAAO, gB; K; kFAGX, qB; MAKI, OAAO, gB;  
K; kFAGX, qB; MAKI, OAAO, gB; K; kFAGX, qB; MAKI, OAAO, gB; K; kFAGX, gC; MAKoB, Q; MADhB, YAAY, C; M  
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C, OAAO, K; K; kFAGX, gC; MAKoB, Q; MADhB, YAAY, C; MACZ, wBAAgB, SAAhB, gB; QAAgB, cAAA, SAAhB, M  
; QAAsB, IAAI, UAAU, OAAV, CAAJ, C; UAAwB, qB,; MAC9C, OAAO, K; K; mFAGX, gC; MAKoB, Q; MADhB, YAA  
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B;MAAb,aAAU,CAAV,iB;QACI,QAAQ,UAAK,CAAL,C;QACR,IAAM,QAAF,CAAE,CAAN,C;UAAe,OAAO,C  
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V,iB;QACI,QAAQ,UAAK,CAAL,C;QACR,IAAI,sBAAM,CAAN,KAJ,C;UAAa,MAAM,C;;MAEvB,OAAO,G;  
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D;MAGRA,wE;MAhRA,uC;QAOW,kBAAoB,gB;QAgRd,gB;QADb,YAAY,C;QACC,2B;QAAb,OAAa,cAAb,C;U  
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X,C;IAWA,6B;MAMoB,Q;MAFhB,IAAI,oCAAJ,C;QAAwB,OAAO,c;MAC/B,YAAy,C;MACI,2B;MAAhB,OA  
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,UAAhB,C;QACI,cAAc,UAAU,WAAV,EAAuB,QAAS,OAAhC,C;;MAEIB,OAAO,W;K;IAqBS,6H;MAAA,wC;  
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A,KAAgB,yBAAhB,C;gBAAA,gB;;;cAAGB,oC;cACZ,yBAAc,6BAAU,sBAAV,EAAuB,OAAvB,C;cACd,gB;8B  
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,wC;MAAA,6B;MAAA,yB;MAAA,8C;MAAA,gD;MAAA,kD;MAAA,wB;MAAA,yB;MAAA,+B;MAAA,kC;K;;;  
;sDAAA,Y;;;kBAKmc,I;cAJ/C,gB;8BAAA,iCAAM,0BAAN,O;kBAAA,2C;uBAAA,yB;cAAA,Q;;;iCACY,C;u  
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,G;K;4FAGX,+B;MAOoB,Q;MADhB,UAAkB,G;MACF,2B;MAAhB,OAAgB,cAAhB,C;QAAgB,yB;QACZ,OAA  
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X,+B;MASoB,Q;MAFhB,UAAkB,G;MACIB,YAAiB,C;MACD,2B;MAAhB,OAAgB,cAAhB,C;QAAgB,yB;QAC  
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nB,E;;MAEJ,OAAW,UAAS,CAAb,GAAgB,wCAA O,IAAvB,GAAgC,MAAM,K;K;IAGjD,+B;MASoB,Q;MAFhB  
,UAAkB,G;MACIB,YAAiB,C;MACD,2B;MAAhB,OAAgB,cAAhB,C;QAAgB,yB;QACZ,OAAO,O;QACP,oBAA  
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AvB,GAAgC,MAAM,K;K;IAGjD,+B;MASoB,Q;MAFhB,UAAkB,G;MACIB,YAAiB,C;MACD,2B;MAAhB,OA  
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eA,+B;MEueA,0BAOGC,yB;QF9ehC,+B;eE8egC,6B;UAAA,qB;YAAE,yBFpeQ,eEoeE,EFpeF,CEoeR,C;W;S;OA  
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;S;OAAF,C;MAP/B,uC;QAOmB,kBAAR,iB;QAAQ,sB;;UIC8xBD,Q;UAAA,OAAQ,SAAR,wBAAQ,CAAR,W;U  
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zB,C;cACI,qBAAO,K;cAAP,uB;;UAGR,qBAAO,E;;;QkCnyBP,yB;O;KAPJ,C;+FAUA,yB;MAAA,sC;MICmyBA,  
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,OAAQ,SAAR,wBAAQ,CAAR,W;UAAAd,OAAC,cAAAd,C;YAAc,uB;YACV,IkCjyByB,U9BpkBY,gBjQ2CvB,YA  
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J,C;iFAUA,yB;MAAA,4C;M/B5jBA,6B;M+B4jBA,4B;QAQI,O/B1jBmC,c+B0jBpB,KAAR,iBAAQ,C/B1jBoB,C;  
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uB,C;O;KE8iB1C,C;iFAWA,yB;MAAA,4C;MhCpnBA,+B;MgConBA,4B;QAQI,OhClnBsC,egCknBvB,KAAR,iB  
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,uB;UACV,cAAc,sBAAK,KAAL,C;UACd,IAAI,UAAU,OA AV,CAAJ,C;YAAwB,OAAO,O;;QAE nC,MAAM,gC  
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Z,C;sFAUA,yB;MAAA,kD;MAAA,4B;QAOY,QAAR,iBAAQ,C;O;KAPZ,C;uFAUA,yB;MAAA,kD;MAAA,4B;Q  
AOY,QAAR,iBAAQ,C;O;KAPZ,C;uFAUA,yB;MAAA,kD;MAAA,4B;QAOY,QAAR,iBAAQ,C;O;KAPZ,C;IAU  
A,gC;MAMI,IAAI,mBAAJ,C;QA Ae,OAAO,W;MACtB,WAAW,0B;MACN,WAAL,IAAK,C;MACL,OAAO,I;K;I  
AGX,gC;MAMI,IAAI,mBAAJ,C;QA Ae,OAAO,W;MACtB,WAAW,0B;MACN,WAAL,IAAK,C;MACL,OAAO,I;  
K;IAGX,gC;MAMI,IAAI,mBAAJ,C;QA Ae,OAAO,W;MACtB,WAAW,0B;MACN,WAAL,IAAK,C;MACL,OAA  
O,I;K;IAGX,gC;MAMI,IAAI,mBAAJ,C;QA Ae,OAAO,W;MACtB,WAAW,0B;MACN,WAAL,IAAK,C;MACL,O  
AAO,I;K;kGAGX,yB;MAAA,8D;MAAA,uC;MAAA,4B;QAOI,OAAO,oBAAmB,cAAR,iBAAQ,CAAnB,C;O;KAPX,  
C;mGAUA,yB;MAAA,8D;MAAA,yC;MAAA,4B;QAOI,OAAO,oBAAmB,cAAR,iBAAQ,CAAnB,C;O;KAPX,C;  
mGAUA,yB;MAAA,8D;MAAA,2C;MAAA,4B;QAOI,OAAO,qBAAoB,cAAR,iBAAQ,CAApB,C;O;KAPX,C;IA  
UA,qC;MAMI,IAAI,iBAAO,CAAX,C;QACI,iB;QAhII,UAAR,iBAAQ,C;Q;IAqIZ,qC;MAMI,IAAI,iBAAO,CAA  
X,C;QACI,iB;QAI,UAAR,iBAAQ,C;Q;IAuIZ,sC;MAMI,IAAI,iBAAO,CAAX,C;QACI,iB;QApII,UAAR,iBAAQ  
,C;Q;IAyIZ,sC;MAMI,IAAI,iBAAO,CAAX,C;QACI,iB;QAtII,UAAR,iBAAQ,C;Q;IA2IZ,6B;MAMoB,kBA+eT,c  
AAU,iBpB35EO,QoB25EjB,C;MA/eiB,mB;MAAxB,OAAiC,SjBnmF1B,WiBmmF0B,C;K;IAGrC,8B;MAMoB,kB  
AkfT,eAAmB,UAAR,iBAAQ,CAAnB,C;MALfiB,mB;MAAxB,OAAiC,SjB5mF1B,WiB4mF0B,C;K;IAGrC,8B;M  
AMoB,kBAqfT,eAAW,iBpBv8EM,QoBu8EjB,C;MARfiB,mB;MAAxB,OAAiC,UjBrnF1B,WiBqnF0B,C;K;IAGrC  
,8B;MAMoB,kBAwfT,gBAAy,iBpBz8EK,QoBy8EjB,C;MAxfiB,mB;MAAxB,OAAiC,UjB9nF1B,WiB8nF0B,C;

K;IAGrC,kC;MAMI,IAAI,mBAAJ,C;QAAe,OAAO,S;MACD,kBA0cd,cA1cA,SA0cU,QpB35EO,QoB25EjB,C;M  
A1csB,mB;MAA7B,OjBxoFO,W;K;liB2oFX,kC;MAMI,IAAI,mBAAJ,C;QAAe,OAAO,S;MACD,kBA4cd,eAAm  
B,UA5cnB,SA4cW,QAAQ,CAAnB,C;MA5csB,mB;MAA7B,OjB1pFO,W;K;liBqpFX,kC;MAMI,IAAI,mBAAJ,C;  
QAAe,OAAO,S;MACD,kBA8cd,eA9cA,SA8cW,QpBv8EM,QoBu8EjB,C;MA9csB,mB;MAA7B,OjB5pFO,W;K;I  
iB+pFX,mC;MAMI,IAAI,mBAAJ,C;QAAe,OAAO,S;MACD,kBAgdd,gBAhdA,SAgdY,QpBz8EK,QoBy8EjB,C;  
MAhdsB,mB;MAA7B,OjBtqFO,W;K;liByqFX,4C;MAMI,IAAI,mBAAJ,C;QAAe,OAAO,S;MACD,kBAkad,cAla  
A,SAkaU,QpB35EO,QoB25EjB,C;MALasB,6B;MAA7B,OjBhrFO,W;K;liBmrFX,4C;MAMI,IAAI,mBAAJ,C;QA  
Ae,OAAO,S;MACD,kBAoad,eAAmB,UapanB,SAoaW,QAAQ,CAAnB,C;MApasB,6B;MAA7B,OjB1rFO,W;K;li  
B6rFX,4C;MAMI,IAAI,mBAAJ,C;QAAe,OAAO,S;MACD,kBASad,eAtaA,SAaW,QpBv8EM,QoBu8EjB,C;Mata  
sB,8B;MAA7B,OjBpsFO,W;K;liBusFX,6C;MAMI,IAAI,mBAAJ,C;QAAe,OAAO,S;MACD,kBAwad,gBAxaA,S  
AwaY,QpBz8EK,QoBy8EjB,C;MAxasB,8B;MAA7B,OjB9sFO,W;K;liBitFX,uC;MAQoB,kBAyXT,cAAU,iBpB35  
EO,QoB25EjB,C;MAzXiB,mB;MAAxB,OAAiC,YjBzF1B,WiBytF0B,C;K;IAGrC,wC;MAQoB,kBA0XT,eAAmB  
,UAAR,iBAAQ,CAAnB,C;MA1XiB,mB;MAAxB,OAAiC,YjBpuF1B,WiBouF0B,C;K;IAGrC,wC;MAQoB,kBA2  
XT,eAAW,iBpBv8EM,QoBu8EjB,C;MA3XiB,mB;MAAxB,OAAiC,YjBvF1B,WiBvF0B,C;K;IAGrC,wC;MAQ  
oB,kBA4XT,gBAAY,iBpBz8EK,QoBy8EjB,C;MA5XiB,mB;MAAxB,OAAiC,YjB1vF1B,WiB0vF0B,C;K;4FAGr  
C,qB;MAQI,OAAO,iB;K;0FAGX,qB;MAQI,OAAO,iB;K;4FA+BX,qB;MAQI,OAAO,iB;K;8FAGX,qB;MAQI,O  
AAO,iB;K;8FAGX,yB;MAAA,yC;MAAA,4B;QAQI,OAAO,oBAAW,SAAX,C;O;KARX,C;4FAWA,yB;MAAA,u  
C;MAAA,4B;QAQI,OAAO,mBAAU,SAAV,C;O;KARX,C;8FAWA,yB;MAAA,yC;MAAA,4B;QAQI,OAAO,oB  
AAW,SAAX,C;O;KARX,C;gGAWA,yB;MAAA,2C;MAAA,4B;QAQI,OAAO,qBAAY,SAAZ,C;O;KARX,C;IAW  
A,2C;MAOI,OAAe,cAAR,iBAAQ,EAAC,KAAM,QAAPB,C;K;IAGnB,2C;MAOI,OAAe,cAAR,iBAAQ,EAAC,KA  
AM,QAAPB,C;K;IAGnB,2C;MAOI,OAAe,cAAR,iBAAQ,EAAC,KAAM,QAAPB,C;K;IAGnB,2C;MAOI,OAAe,c  
AAR,iBAAQ,EAAC,KAAM,QAAPB,C;K;IAGnB,sC;MAMI,OAAe,gBAAR,iBAAQ,C;K;IAGnB,sC;MAMI,OAA  
e,gBAAR,iBAAQ,C;K;IAGnB,sC;MAMI,OAAe,gBAAR,iBAAQ,C;K;IAGnB,sC;MAMI,OAAe,gBAAR,iBAAQ,  
C;K;IAGnB,oC;MAQI,OAAO,0BAAa,IAAb,EAAMB,GAAnB,EAawB,GAAxB,C;K;IAGX,sC;MAQI,OAAO,0B  
AAa,IAAb,EAAMB,GAAnB,EAawB,GAAxB,C;K;IAGX,sC;MAQI,OAAO,0BAAa,IAAb,EAAMB,GAAnB,EA  
awB,GAAxB,C;K;IAGX,sC;MAQI,OAAO,0BAAa,IAAb,EAAMB,GAAnB,EAawB,GAAxB,C;K;sFAGX,yB;MpB  
v+EA,8C;MoBu+EA,kF;QAmB6D,iC;UAAA,oBAAYB,C;QAAG,0B;UAAA,aAAkB,C;QAAG,wB;UAAA,WAAg  
B,c;QpBt+E1H,UoBu+EA,iBpBv+EA,EoBu+EiB,WAAy,QpBv+E7B,EoBu+EsC,iBpBv+EtC,EoBu+EyD,UpBv+  
EzD,EoBu+EqE,QpBv+ErE,C;QoBw+EA,OAAO,W;O;KArBX,C;wFAwBA,yB;MpBv+EA,8C;MoBu+EA,kF;QA  
mB+D,iC;UAAA,oBAAYB,C;QAAG,0B;UAAA,aAAkB,C;QAAG,wB;UAAA,WAAgB,c;QpBt+E5H,UoBu+EA,i  
BpBv+EA,EoBu+EiB,WAAy,QpBv+E7B,EoBu+EsC,iBpBv+EtC,EoBu+EyD,UpBv+EzD,EoBu+EqE,QpBv+ErE,  
C;QoBw+EA,OAAO,W;O;KArBX,C;wFAwBA,yB;MpBvkFA,8C;MoBukFA,kF;QAmB+D,iC;UAAA,oBAAYB,C  
;QAAG,0B;UAAA,aAAkB,C;QAAG,wB;UAAA,WAAgB,c;QpBtkF5H,UoBukFA,iBpBvkFA,EoBukFiB,WAAy,  
QpBvkF7B,EoBukFsC,iBpBvkFtC,EoBukFyD,UpBvkFzD,EoBukFqE,QpBvkFrE,C;QoBwkFA,OAAO,W;O;KArB  
X,C;wFAwBA,yB;MpBvkFA,8C;MoBukFA,kF;QAmBiE,iC;UAAA,oBAAYB,C;QAAG,0B;UAAA,aAAkB,C;QA  
AG,wB;UAAA,WAAgB,c;QpBtkF9H,UoBukFA,iBpBvkFA,EoBukFiB,WAAy,QpBvkF7B,EoBukFsC,iBpBvkFtC  
,EoBukFyD,UpBvkFzD,EoBukFqE,QpBvkFrE,C;QoBwkFA,OAAO,W;O;KArBX,C;kFAwBA,yB;MAAA,uC;MA  
AA,4B;QASI,OAAO,mBAAU,iBpB35EO,QoB25EjB,C;O;KATX,C;oFAYA,yB;MAAA,gD;MAAA,yC;MAAA,4  
B;QASI,OAAO,oBAAMB,OAAR,iBAAQ,CAAnB,C;O;KATX,C;oFAYA,yB;MAAA,yC;MAAA,4B;QASI,OAAO  
,oBAAW,iBpBv8EM,QoBu8EjB,C;O;KATX,C;oFAYA,yB;MAAA,2C;MAAA,4B;QASI,OAAO,qBAAY,iBpBz8  
EK,QoBy8EjB,C;O;KATX,C;oFAYA,yB;MAAA,gD;MAAA,uC;MAAA,qC;QAWI,OAAO,mBAAkB,OAAR,iBA  
AQ,EAAO,OAAP,CAAIb,C;O;KAXX,C;oFAcA,yB;MAAA,gD;MAAA,yC;MAAA,qC;QAWI,OAAO,oBAAMB,  
OAAR,iBAAQ,EAAO,OAAP,CAAnB,C;O;KAXX,C;oFAcA,yB;MAAA,+C;MAAA,yC;MAAA,qC;QAWI,OAA  
O,oBAAMB,OAAR,iBAAQ,EAAO,OAAP,CAAnB,C;O;KAXX,C;oFAcA,yB;MAAA,gD;MAAA,2C;MAAA,qC;  
QAWI,OAAO,qBAAoB,OAAR,iBAAQ,EAAO,OAAP,CAAPB,C;O;KAXX,C;4FAcA,yB;MAAA,0D;MAAA,uC;  
MAAA,gD;QAUI,OAAO,mBAAkB,YAAR,iBAAQ,EAAY,SAAZ,EAAuB,OAAvB,CAAIb,C;O;KAVX,C;8FAaA  
,yB;MAAA,0D;MAAA,yC;MAAA,gD;QAUI,OAAO,oBAAMB,YAAR,iBAAQ,EAAY,SAAZ,EAAuB,OAAvB,C  
AAnB,C;O;KAVX,C;8FAaA,yB;MAAA,0D;MAAA,yC;MAAA,gD;QAUI,OAAO,oBAAMB,YAAR,iBAAQ,EAA

Y, SAAZ, EAAuB, OAAvB, CAAnB, C; O; KAVX, C; 6FAaA, yB; MAAA, 0D; MAAA, 2C; MAAA, gD; QAUI, OAAO, qB  
AAoB, YAAR, iBAAQ, EAAY, SAAZ, EAAuB, OAAvB, CAAPB, C; O; KAVX, C; IAaA, sD; MAWYc, yB; QAAA, YAAi  
B, C; MAAG, uB; QAAA, UAAe, c; MACHe, OAAr, iBAAQ, EAAK, O/B/nGoB, K+B+nGzB, EAAsB, SAAtB, EAAiC, O  
AAjC, C; K; IAGZ, wD; MAW2C, yB; QAAA, YAAiB, C; MAAG, uB; QAAA, UAAe, c; MACIE, OAAr, iBAAQ, EAAK,  
OFnoGsB, KEemoG3B, EAAuB, SAAvB, EAAkC, OAAIC, C; K; IAGZ, wD; MAW2C, yB; QAAA, YAAiB, C; MAAG, uB;  
QAAA, UAAe, c; MACIE, OAAr, iBAAQ, EAAK, OhCzrGsB, KgCyrG3B, EAAuB, SAAvB, EAAkC, OAAIC, C; K; IAG  
Z, wD; MAW6C, yB; QAAA, YAAiB, C; MAAG, uB; QAAA, UAAe, c; MACpE, OAAr, iBAAQ, EAAK, O9B7rGwB, K8  
B6rG7B, EAAwB, SAAxB, EAAMC, OAAnc, C; K; 8FASr, yB; MAAA, 0D; MAAA, 4B; QAAQ, OAAQ, YAAR, iBAAQ  
, C; O; KAAhB, C; 8FAQA, yB; MAAA, 0D; MAAA, 4B; QAAQ, OAAQ, YAAR, iBAAQ, C; O; KAAhB, C; +FAQA, yB; M  
AAA, 0D; MAAA, 4B; QAAQ, OAAQ, YAAR, iBAAQ, C; O; KAAhB, C; +FAQA, yB; MAAA, 0D; MAAA, 4B; QAAQ, O  
AAQ, YAAR, iBAAQ, C; O; KAAhB, C; kGAQA, yB; MAAA, 8D; MAAA, 4B; QAAQ, OAAQ, cAAR, iBAAQ, C; O; KAA  
hB, C; kGAQA, yB; MAAA, 8D; MAAA, 4B; QAAQ, OAAQ, cAAR, iBAAQ, C; O; KAAhB, C; mGAQA, yB; MAAA, 8D;  
MAAA, 4B; QAAQ, OAAQ, cAAR, iBAAQ, C; O; KAAhB, C; mGAQA, yB; MAAA, 8D; MAAA, 4B; QAAQ, OAAQ, cAA  
R, iBAAQ, C; O; KAAhB, C; iFAEJ, yB; MAAA, uC; MpBrmEA, iD; MoBqmEA, qC; QAOqB, 4B; QAAA, gBAAU, O/Btv  
GM, K; Q+BsvGjC, OAAO, mBpBvmEA, 2BAxIK, gBAAW, SAAX, EAwIL, CoBumEA, C; O; KAPX, C; iFAUA, yB; M  
AAA, yC; MpBvmEA, iD; MoBumEA, qC; QAOI, OAAO, oBpBzmEA, qBoBymEW, iBpBzmEX, EAxIK, mBoBivEgB,  
OFrvGO, KIBogCvB, CAwIL, CoBymEA, C; O; KAPX, C; iFAUA, yB; MAAA, yC; MpBzoEA, iD; MoByoEA, qC; QAOs  
B, 4B; QAAA, gBAAU, OhCtyGO, K; QgCsyGnC, OAAO, oBpB3oEA, 2BAxIK, eAAY, SAAZ, EAwIL, CoB2oEA, C; O;  
KAPX, C; iFAUA, yB; MAAA, 2C; MpB3oEA, iD; MoB2oEA, qC; QAOuB, 4B; QAAA, gBAAU, O9BryGQ, K; Q8BqyGr  
C, OAAO, qBpB7oEA, 2BAxIK, gBAaA, SAAb, EAwIL, CoB6oEA, C; O; KAPX, C; IAUA, sC; MAQoB, UAAiB, M; MAF  
jC, YAAY, c; MACZ, aAAqB, UAAR, iBAAQ, EAAO, iBAAO, QAAS, KAAhB, IAAP, C; MACL, 0B; MAAhB, OAAgB, c  
AAhB, C; QAAgB, yB; QAAU, OAAO, cAAP, EAAO, sBAAP, YAAkB, O/B/xGX, K; ; M+BgyGjC, OAAO, cAAU, MAA  
V, C; K; IAGX, sC; MAQoB, UAAiB, M; MAFjC, YAAY, c; MACZ, aAAqB, UAAR, iBAAQ, EAAO, iBAAO, QAAS, KA  
AhB, IAAP, C; MACL, 0B; MAAhB, OAAgB, cAAhB, C; QAAgB, yB; QAAU, OAAO, cAAP, EAAO, sBAAP, YAAkB, O  
FhyGT, K; ; MEiyGnC, OAAO, eAAW, MAAX, C; K; IAGX, sC; MAQoB, UAAiB, M; MAFjC, YAAY, c; MACZ, aAAqB,  
UAAR, iBAAQ, EAAO, iBAAO, QAAS, KAAhB, IAAP, C; MACL, 0B; MAAhB, OAAgB, cAAhB, C; QAAgB, yB; QAA  
U, OAAO, cAAP, EAAO, sBAAP, YAAkB, OhCn1GT, K; ; MgCo1GnC, OAAO, eAAW, MAAX, C; K; IAGX, sC; MAQoB  
, UAAiB, M; MAFjC, YAAY, c; MACZ, aAAqB, UAAR, iBAAQ, EAAO, iBAAO, QAAS, KAAhB, IAAP, C; MACL, 0B;  
MAAhB, OAAgB, cAAhB, C; QAAgB, yB; QAAU, OAAO, cAAP, EAAO, sBAAP, YAAkB, O9Bp1GP, K; ; M8Bq1GrC,  
OAAO, gBAAY, MAAZ, C; K; iFAGX, yB; MAAA, uC; MpB7rEA, iD; MoB6rEA, sC; QAOI, OAAO, mBpB/rEA, qBoB+r  
EU, iBpB/rEV, EoB+rEoB, QAAS, QpB/rE7B, CoB+rEA, C; O; KAPX, C; iFAUA, yB; MAAA, yC; MpB/rEA, iD; MoB+r  
EA, sC; QAOI, OAAO, oBpBjsEA, qBoBisEW, iBpBjsEX, EoBisEqB, QAAS, QpBjsE9B, CoBisEA, C; O; KAPX, C; iFA  
UA, yB; MAAA, yC; MpBjuEA, iD; MoBiuEA, sC; QAOI, OAAO, oBpBnuEA, qBoBmuEW, iBpBnuEX, EoBmuEqB, QA  
AS, QpBnuE9B, CoBmuEA, C; O; KAPX, C; iFAUA, yB; MAAA, 2C; MpBnuEA, iD; MoBmuEA, sC; QAOI, OAAO, qBp  
BruEA, qBoBquEY, iBpBruEZ, EoBquEsB, QAAS, QpBruE/B, CoBquEA, C; O; KAPX, C; IAUA, 2B; MAQI, IAAI, iBAA  
O, CAAX, C; QAAC, YAAU, SAAV, C; K; IAGIB, 2B; MAQI, IAAI, iBAAO, CAAX, C; QAAC, YAAU, SAAV, C; K; IAGIB  
, 2B; MAQI, IAAI, iBAAO, CAAX, C; QAAC, YAAU, SAAV, C; K; IAGIB, 2B; MAQI, IAAI, iBAAO, CAAX, C; QAAC, YA  
AU, SAAV, C; K; 8FAGIB, qB; MAQI, OAAO, iBpB13FiB, Q; K; 4FoBq3F5B, qB; MAQI, OAAO, iBpBz2FiB, Q; K; 8FoB4  
2F5B, yB; MAAA, gD; MAAA, 4B; QAQI, OAAe, OAAr, iBAAQ, C; O; KARnB, C; gGAWA, qB; MAQI, OAAO, iBpBz4  
FiB, Q; K; IoBk5FL, gD; MAAA, wB; QAAW, qCAAK, KAAL, C; O; K; IANIC, iC; MAMI, OAAO, iBAAM, cAAN, EAAY  
, 8BAAZ, C; K; IASY, kD; MAAA, wB; QAAW, qCAAK, KAAL, C; O; K; IANIC, mC; MAMI, OAAO, iBAAM, cAAN, EA  
AY, gCAAZ, C; K; IASY, kD; MAAA, wB; QAAW, qCAAK, KAAL, C; O; K; IANIC, mC; MAMI, OAAO, iBAAM, cAAN,  
EAAY, gCAAZ, C; K; IASY, kD; MAAA, wB; QAAW, qCAAK, KAAL, C; O; K; IANIC, mC; MAMI, OAAO, iBAAM, cAAN,  
N, EAAY, gCAAZ, C; K; IASiB, gD; MAAA, wB; QAAW, yBAAK, KAAL, C; O; K; IANvC, iC; MAMI, OL3mHO, eAAW,  
+BK2mHA, gBL3mHA, GAAgB, kBK2mHV, 8BL3mHU, CAAhB, CAAX, C; K; gGK8mHX, yB; MAAA, yC; MAAA, 4  
B; QAQI, OAAO, oBAAW, SpB38FM, QoB28FjB, C; O; KARX, C; IAiB2B, 8C; MAAA, wB; QAAW, wBAAK, KAAL, C;  
O; K; IANtC, gC; MAMI, OJ/nHO, cAAU, gCI+nHA, gBJ/nHA, GAAe, iBi+nHT, 6BJ/nHS, CAaf, CAAV, C; K; 8FIkoHX,  
yB; MAAA, uC; MAAA, 4B; QAQI, OAAO, mBAAU, SpB38FO, QoB28FjB, C; O; KARX, C; IAiB4B, gD; MAAA, wB; Q

AAW,yBAAK,KAAL,C;O;K;IANvC,iC;MAMI,OHnpHO,eAAW,kBGmpHA,gBHnpHA,EAAGB,kBGmpHV,8BH  
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B,C;UAAgB,yB;UACZ,WAnD6B,SAmDIB,CAAU,OAAV,C;UACC,OAAZ,WAAY,EAAO,IAAP,C;;QApDhB,O  
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DpB,EAAU,cAAV,EAAU,sBAAV,WAAmB,IAAnB,CAAJ,C;;QAZDhB,OA0DO,W;O;KApEX,C;6FAaA,yB;MA  
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YA,gC;MASoB,Q;MAAA,2B;MAAhB,OAAgB,cAAhB,C;QAAgB,yB;QAAM,IAAI,UAAU,OAAV,CAAJ,C;UA  
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MD,C;MACX,QAAQ,C;MACQ,OAhFL,KAGFK,W;MAAhB,OAAgB,cAAhB,C;QAAgB,yB;QACZ,IAAI,KAAK,  
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B,OAAzB,C;K;wDAE5E,8B;MAII,eAAe,0BAaA,SAAb,C;MACf,YAAO,UAAU,SAAV,I;MtDgEX,iBAAc,CAAd,  
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CA,eAAQ,W;MACR,cAAO,E;K;;IAOqB,6D;MAHPC,oB;MAGmD,wD;MAG3C,oCAAa,4BAAmB,KAAAnB,EAA  
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MACA,mC;MACA,cAAO,E;K;+DAGX,mB;M1DrEJ,IAAI,E0DsEU,gBAAQ,E1DtEIB,CAAJ,C;QACI,c0DqEwB,  
4E;Q1DpExB,MAAM,6BAAsB,OAAQ,WAA9B,C;O0DqEF,wBAAYB,WAAzB,EAAiC,OAAjC,C;K;;IAIgb,+D;  
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ACA,OAAO,M;K;wDAGX,0B;MACI,oCAAa,2BAAkB,KAAIB,EAAYB,YAAzB,C;MAEb,OAAO,WAAK,aAAI,  
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,oB;K;8DAE9B,oB;MACI,eAAe,IAAK,S;MACpB,gBAAC,Q;MACd,OAAO,Q;K;wDAGX,Y;MAA+B,iEAAc,IAA  
d,C;K;wDAC/B,Y;MAAkC,iEAAc,IAAd,C;K;sDACIC,iB;MAA4C,+DAAY,IAAZ,EAakB,KAAIB,C;K;;IAd5C,8  
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,oBAAoB,oCAAQ,W;MAC5B,6G;K;0FAOJ,mB;MACI,IAAI,+CAAY,OAAZ,CAAJ,C;QACI,4BAAwB,cAAO,O  
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;K;IAQc,iG;MAAA,sD;MAAS,oC;K;yFACf,mB;MAAwC,MAAM,qCAA8B,gCAA9B,C;K;qFAC9C,Y;MAAuB,4  
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K,S;UACL,OAAO,K;;MAGf,OAAO,I;K;;IC5HoC,8B;MAAiC,oC;K;0CAEHf,iB;MAMI,IAAI,UAAU,IAAd,C;QA  
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W,KAAx,CAAN,4D;K;sCACzC,0B;MAGW,IAAa,I;MAFpB,0BAAW,KAAx,C;MAEoB,gBAAb,qBAAM,KAA  
N,C;MAAqB,qC;MAA5B,OAAO,CAAa,OzDsCjB,SyDtCI,2D;K;oCAGX,mB;MACU,oBAAY,MAAK,OAAAL,C;

MACIB,qC;MACA,OAAO,I;K;sCAGX,0B;MACU,oBAAY,QAAO,mCAAoB,KAApB,CAAP,EAAMc,CAAnC,E  
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B,SAAnB,CAA5C,C;;MAG5D,qC;MACA,OAAO,I;K;2CAGX,iB;MACI,0BAAW,KAAAX,C;MACA,qC;MACA,O  
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C,C;K;uCAGR,mB;MACkB,Q;MAAA,2B;MAAd,mD;QACI,IAAI,4BAAM,KAAAN,GAAgB,OAAhB,CAAJ,C;UA  
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C;MACM,oBAAY,QAAO,SAAP,EAAB,UAAU,SAAV,IAAIB,C;K;gCAGtB,Y;MACI,uBpBhGuC,E;MoBiGvC,  
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K0B,+B;QAAA,kBAAuB,C;MALjD,mD;MAKsD,sBpBdX,EoBcW,C;MALtD,Y;K;IAOA,2C;MAAA,mD;MAGq  
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EIB,UAAU,KAAV,EAawC,CAAxC,EAaiD,cAAN,KAAAM,CAAjD,+BAAuE,UAAvE,E;;K;IAMiB,kD;MAAA,u  
B;QAAgB,OAAA,kBAAW,SAAQ,CAAR,EAAW,CAAX,C;O;K;IAFpD,4C;MACI,IAAI,6BAAJ,C;QACI,iBAAiB  
,gC;QACX,KAAAY,MAAK,UAAL,C;;QAEIB,UAAU,KAAV,EAawC,CAAxC,EAaiD,cAAN,KAAAM,CAAjD,EA  
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E3E+pWV,sB2E/pWU,Y3E+pWD,I;;Q;I2E3pWvC,4D;MAEI,IAAI,UAAS,GAAb,C;QACI,OAAO,K;OAGX,aAA  
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kC;MAAuB,sBAAc,MAAd,C;MACL,Q;MAAtD,4BAAmC,CAAmB,OAAZ,MAAY,WAAnB,kC;K;0EAAnc,Y;M  
AAA,gC;K;oDAEA,iB;MACW,cAAgB,W;MAAvB,OxDqCuD,MAAa,QwDrCpD,KxDqCoD,EAAY,OAAZ,C;K;;  
IwDjCjC,0E;MAIvC,sBAAc,MAAd,C;MAFA,wC;MACA,8C;K;2CAEA,iB;MACI,IAAI,0CAAJ,C;QAAsC,OAA  
O,K;MAC7C,OAAa,uCAA0,KAAP,CAAN,IAAuB,+BAAmB,KAAM,kBAAzB,C;K;6EAGD,Y;MAAQ,6B;K;uD  
AEzC,iB;MACI,OAAO,0BAAmB,KAAnB,C;K;;IAIf,6B;MAAA,iC;MAAoC,sBAAoB,MAApB,C;MAChC,4BAA  
kC,S;K;2EAAIC,Y;MAAA,gC;K;qDAEA,iB;MAAGD,Y;K;uEAG5C,Y;MAAQ,MAAM,qCAA8B,6CAA9B,C;K;y  
CAEIB,iB;MAA4C,iBAAU,I;K;2CAEtD,Y;MAA+B,Q;K;;IAVnC,yC;MAAA,wC;QAAA,uB;OAAA,iC;K;ICxEA  
,gE;MAMI,qBAAU,UAAV,EAAGC,OAAV,WAAU,CAAhC,EAA0C,gBAA1C,C;K;IAEJ,8B;MAC2C,iC;K;IAE3  
C,kC;MAC+C,qBAAU,cAAA,KAAM,WAAN,CAAV,EAA8B,KAAM,UAApC,EAA+C,IAA/C,C;K;IAE/C,2D;M  
AM0B,IAAN,I;MAAA,QAAM,QAAN,C;aACZ,I;;UAAA,K;aACA,K;;UAAA,K;;UAFY,K;;MAAhB,oB;MAMA,  
OAAO,uBAAmB,IAAnB,EAAqC,OAAZ,WAAY,CAArC,EAA+C,SAA/C,EAA0D,KAA1D,C;K;IAGX,kC;MAEI,  
OAAA,uCAAgB,K;K;IAEpB,8C;MAEI,OAAA,uCAAgB,mBAAU,IAAV,C;K;IAEpB,8C;MAEI,OAAA,uCAAgB,  
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CA,kD;K;mEFA,Y;MAAA,gC;K;KEACA,Y;MAAA,+B;K;yEACA,Y;MAAA,sC;K;oEAGI,Y;MAAQ,kB;K;iCA  
EZ,iB;MACI,0CACQ,wBAAc,KAAM,WAAP,CADR,IAC0C,uBAAa,KAAM,UAAAnB,CAD1C,IAC0E,0BAAoB,  
KAAM,iB;K;mCAExG,Y;MACI,SAAC,CAAW,SAAX,eAAW,CAAX,GAAwB,EAAXB,QAAC,SAAV,cAAU,C  
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H,EAAG,C;O;K;mCAVzD,Y;MackB,UACO,M;MADrB,aAAc,2D;MAEV,cAAU,IAAV,C;QAA6B,SAAX,eAA  
W,W;WAC7B,IAAA,MAAO,WAAP,S;QAAoC,SAAP,MAAO,W;;QAC5B,+B;MAHZ,2B;MAMA,WACQ,cAAU,  
UAAAd,GAAYB,EAazB,GACe,eAAV,cAAU,EAaA,IAAb,EAAMB,GAAnB,EAawB,GAaxB,kBAA6B,+BAA7B,  
C;MACnB,eAAmB,qBAAJ,GAAsB,GAAtB,GAA+B,E;MAE9C,OAAO,iBAAiB,IAAjB,GAAwB,Q;K;qCAGnC,q  
B;MAEI,IAAI,sBAAy,IAAhB,C;QAAsB,OAAO,G;MAC7B,OAAgB,aAAT,kBAAS,CAAT,GAA+B,SAAL,cAA  
K,C;K;;IAI9C,wB;MAAA,4B;MACI,4BAAwC,I;MACxC,2BAAgD,W;MACHd,kCAAyC,K;MACzC,6BAA6C,W

;K;sEAH7C,Y;MAAA,gC;K;qEACA,Y;MAAA,+B;K;4EACA,Y;MAAA,sC;K;uEACA,Y;MAAA,iC;K;sCACA,Y;MAAkC,gB;K;;;IALtC,oC;MAAA,mC;QAAA,kB;OAAA,4B;K;IAQA,iC;MACI,QAAM,SAAN,M;aACI,W;UADJ ,OAC2B,E;aACvB,I;UAFJ,OAEoB,K;aAChB,K;UAHJ,OAGqB,M;gBAHrB,mC;;K;IC/CkC,oE;MACIC,0B;MAC A,wC;MACA,kC;MACA,oC;K;sEAHA,Y;MAAA,0B;K;6EACA,Y;MAAA,iC;K;0EACA,Y;MAAA,8B;K;2EACA ,Y;MAAA,+B;K;4CAEA,Y;MAAkC,gB;K;;8CANtC,Y;MACI,gB;K;8CADJ,Y;MAEI,uB;K;8CAFJ,Y;MAGI,oB;K ;8CAHJ,Y;MAII,qB;K;gDAJJ,kD;MAAA,8BACI,kCADJ,EAEI,uDAFJ,EAGI,8CAHJ,EAIL,iDAJJ,C;K;4CAAA,Y; MAAA,c;MACI,qD;MACA,4D;MACA,yD;MACA,0D;MAJJ,a;K;0CAAA,iB;MAAA,4IACI,oCADJ,IAEI,kDAFJ, IAGI,4CAHJ,IAII,8CAJJ,I;K;ICAA,4B;MAAA,gC;MAEI,gBACe,wBAAoB,MAApB,EAA6D,KAA7D,EAAoE,g CAApE,C;MAEf,mBACkB,wBAAoB,MAApB,EAAgE,QAAhE,EAA0E,mCAA1E,C;MAEIB,oBACmB,+B;MAE nB,oBACmB,wBAAoB,OAApB,EAAkE,SAAIE,EAA6E,oCAA7E,C;MAEnB,iBACgB,wBAAoB,MAApB,EAA8 D,MAA9D,EAASe,iCAAtE,C;MAEHb,kBACiB,wBAAoB,MAApB,EAA+D,OAA/D,EAAwE,kCAAxE,C;MAEjB ,gBACe,wBAAoB,MAApB,EAA6D,KAA7D,EAAoE,gCAApE,C;MAEf,kBACiB,wBAAoB,MAApB,EAA+D,OA A/D,EAAwE,kCAAxE,C;MAEjB,mBACkB,wBAAoB,MAApB,EAAgE,QAAhE,EAA0E,mCAA1E,C;MAEIB,kB ACiB,wBAAoB,KAApB,EAAiE,OAAjE,EAA0E,kCAA1E,C;MAEjB,mBACkB,wBAAoB,MAApB,EAAgE,QA A hE,EAA0E,mCAA1E,C;MAEIB,sBACqB,wBAAoB,KAApB,EAAkE,WAAIE,EAA+E,sCAA/E,C;MAErB,yBAC wB,wBAAoB,KAApB,EAAqE,cAArE,EAAqF,yCAArF,C;MAExB,sBACqB,wBAAoB,WAAPB,EAAwE,WAAxE ,EAAqF,sCAArF,C;MAErB,sBACqB,wBAAoB,SAAPB,EAASe,WAAIE,EAAmF,sCAAnF,C;MAErB,uBACsB,w BAAoB,UAApB,EAAwE,YAAxE,EAAf,UCAAtF,C;MAEtB,qBACoB,wBAAoB,UAApB,EAASe,UAAIE,EAAk F,qCAAI,F,C;MAEpB,sBACqB,wBAAoB,KAApB,EAAkE,WAAIE,EAA+E,sCAA/E,C;MAErB,uBACsB,wBAAo B,YAApB,EAA0E,YAA1E,EAAwF,uCAAxF,C;MAEtB,wBACuB,wBAAoB,YAApB,EAA2E,aAA3E,EAA0F,wC AA1F,C;K;IAMkB,qE;MAAA,qB;QAAE,07D/DD,06D+DU,EAAT,KAAiB,UAAjB,IAAkC,EAAY,OAAf,KAA0 B,a;O;K;+CAJpG,iB;MAE2B,Q;MAAhB,U;MAAA,KAAgB,OAAhB,eAAgB,CAAI,KAAJ,CAAhB,U;QAAA,a;;Q ACH,aAAa,wBAAoB,QAAPB,EAA+D,kBAA/D,EACoB,mDADpB,C;QAEg,eAAhB,UAAqC,M;QAHIC,SAIH, M;;MAJJ,a;K;IA7D+E,8C;MAAE,6B;K;IAGO,iD;MAAE,0B;K;IAME,kD;MAAE,8B;K;IAGZ,+C;MAAE,6B;K;I AGC,gD;MAAE,6B;K;IAGR,8C;MAAE,6B;K;IAGI,gD;MAAE,6B;K;IAGC,iD;MAAE,6B;K;IAGH,gD;MAAE,y B;K;IAGD,iD;MAAE,6B;K;IAGM,oD;MAAE,mC;K;IAGO,uD;MAAE,gC;K;IAGL,oD;MAAE,6B;K;IAGJ,oD;M AAE,6B;K;IAGE,qD;MAAE,8B;K;IAGR,mD;MAAE,4B;K;IAGJ,oD;MAAE,6B;K;IAGQ,qD;MAAE,8B;K;IAGC, sD;MAAE,+B;K;;;IA5DvH,wC;MAAA,uC;QAAA,sB;OAAA,gC;K;;ICCA,2B;MACKe,yBAakB,MAAIB,C;K;IA EIE,oC;MAEU,IAAN,I;MAAA,Q9DH0C,08DG3B,CAAf,C;aACI,Q;UAA6B,OAAjB,8BAAiB,Y;UAA7B,K;aAC A,Q;UAAy,OAAI,CAAY,CvDAhC,GuDAmC,CAAf,MAAkC,CAAtC,GAAYC,8BAAiB,SAA1D,GAAwE,8BAAi B,Y;UAArG,K;aACA,S;UAA8B,OAAjB,8BAAiB,a;UAA9B,K;aACA,U;UAA+B,OAAjB,8BAAiB,eAAgB,CAA Y,OAA5B,C;UAA/B,K;gBAGQ,6B;YAAc,OAAjB,8BAAiB,kB;eACtC,0B;YAAmC,OAAjB,8BAAiB,e;eACnC, 0B;YAAmC,OAAjB,8BAAiB,e;eACnC,2B;YAAoC,OAAjB,8BAAiB,gB;eACpC,yB;YAAkC,OAAjB,8BAAiB,c;e ACIC,0B;YAAmC,OAAjB,8BAAiB,e;eACnC,2B;YAAoC,OAAjB,8BAAiB,gB;eACpC,4B;YAAqC,OAAjB,8B A AiB,iB;eACrC,6B;;eACA,sB;YAAkC,OAAjB,8BAAiB,W;;YAE9B,kBAakB,MAAA,gBAAE,CAAf,CAAkB,Y;Y AE7C,oBAAGB,MAAhB,C;cAAiD,OAAjB,8BAAiB,S;iBACjD,oBAAGB,KAAhB,C;cAAgD,OAAjB,8BAAiB,e;;c AE5C,cAA0B,W;cAC1B,yBAakB,OAAIB,C;;;UAXxB,K;;MAAA,W;K;IAGCJ,mC;MAKW,Q;MAJP,IAAI,WA AW,MAAf,C;QAA6B,OAAO,8BAAiB,Y;OAErD,eAAsB,MAAY,W;MAE3B,IAAI,gBAAJ,C;QACH,IAAI,QAAS ,SAAT,QAAC,C;UACI,aAAa,qBAAiB,MAAJB,C;UACb,oBAAsB,M;UACtB,a;;UAES,OAAT,QAAS,S;;;QAGb,4 BAAiB,MAAJB,C;;MATJ,W;K;ICvBJ,0B;MAII,sBAAY,C;K;qEAChB,4B;MAIkE,iBAAY,KAAZ,C;K;2EAEIE,q B;MAI8D,gB;K;ICIDb,2C;MAC7C,qBAAwC,Q;K;iDAExC,Y;MACmB,Q;MAAA,yB;MAAA,iB;QAAe,MAAM,6 BAAsB,0CAAtB,C;OAApC,eAAe,I;MACf,qBAAc,I;MACd,OAAO,QAAS,W;K;;;ICDyB,2C;uBAA+B,O;;K;;IA C5E,8C;MAAA,kE;MAAuB,qCAAK,IAAL,C;MAAvB,Y;K;ICD8B,gC;MAGb9B,gBAAiC,YAAY,SAAhB,GAA2 B,OAA3B,GAAwC,E;K;mEAGjE,Y;MAAQ,OAAO,aAAY,O;K;yCAE/B,iB;MACW,gBAAP,a;M7FiEG,Q;MAA A,I6FjEc,K7FiEV,IAAS,CAAT,I6FjEU,K7FiEI,IAAS,2BAA3B,C;QAAA,OAAsC,qB6FjExB,K7FiEwB,C;;Q6FjE f,MAAM,8BAA0B,mCAAyB,WAAzB,MAA1B,C;;MAAhC,W;K;kDAEJ,gC;MAAGf,OAAA,a3FkKY,W2FIKK, U3FkKL,E2FIKiB,Q3FkKjB,C;K;6C2FhK5F,iB;MACI,qCAAU,KAAV,C;MACA,OAAO,I;K;6CAGX,iB;MACI,i BAAgB,SAAN,KAAAM,C;MACHB,OAAO,I;K;6CAGX,uC;MACKG,OAAA,IAAK,qBAAY,KAAZ,EAAmB,UAA

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Cb,EAAE,OAAF,IAAa,K;MACb,OAAO,C;K;kGAyBX,oB;MAC8B,mB;QAAA,MAAe,S;MAAW,mB;QAAA,M  
AAe,S;MACnE,QAAQ,E;MACR,EAAE,KAAF,IAAW,G;MACX,EAAE,KAAF,IAAW,G;MACX,OAAO,C;K;oH  
AYX,kC;MACuC,qB;QAAA,QAAiB,S;MAAW,qB;QAAA,QAAiB,S;MAAW,mB;QAAA,MAAe,S;MAAW,mB;  
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AW,mB;QAAA,MAAY,S;MAC5D,QAAQ,E;MACR,EAAE,KAAF,IAAW,G;MACX,EAAE,KAAF,IAAW,G;MA  
CX,OAAO,C;K;kHAYX,kC;MACsC,qB;QAAA,QAAc,S;MAAW,qB;QAAA,QAAc,S;MAAW,mB;QAAA,MAA  
Y,S;MAAW,mB;QAAA,MAAY,S;MACvH,QAAQ,E;MACR,EAAE,OAAF,IAAa,K;MACb,EAAE,OAAF,IAAa,K  
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,IAAa,K;MACb,OAAO,C;K;oIAeX,wB;MAC+C,qB;QAAA,QAAiB,S;MAAW,qB;QAAA,QAAiB,S;MACxF,QA  
AQ,E;MACR,EAAE,OAAF,IAAa,K;MACb,EAAE,OAAF,IAAa,K;MACb,OAAO,C;K;4FAKX,Y;MAEI,QAAQ,E  
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,C;K;4FASmE,qB;MAAQ,OAAO,M;K;8FAEd,qB;MAAQ,OAAQ,O;K;4FAQrB,qB;MAAQ,OAAO,M;K;0GAER,  
qB;MAAQ,OAAc,a;K;8FAE7B,qB;MAAQ,OAAO,M;K;gGAEd,qB;MAAQ,OAAQ,O;K;8FAQjB,qB;MAAQ,OA



AO,M;K;gHAEL,qB;MAAQ,OAAiB,gB;K;wGAQRc,qB;MAAQ,OAAa,Y;K;0GAEpB,qB;MAAQ,OAAc,a;K;wGAEvB,qB;MAAQ,OAAa,Y;K;6GCtoB7F,mb;MACmC,yB;QAAA,YAAkB,C;MAAG,qB;QAAA,QAAiB,G;MAAK,sB;QAAA,SAAkB,G;MAAK,wB;QAAA,WAAmB,G;MAAI,kC;QAAA,qBAA6B,G;MAAI,qB;QAAA,QAAc,C;MAAG,qB;QAAA,QAAc,C;MAAG,qB;QAAA,QAAc,C;MAAG,2B;QAAA,cAAuB,E;MAAI,yB;QAAA,YAAsB,K;MAAO,uB;QAAA,UAAgB,C;MAAG,uB;QAAA,UAAgB,C;MAAG,uB;QAAA,UAAgB,C;MAAG,uB;QAAA,UAAgB,C;MAAG,sB;QAAA,SAAiB,C;MAAG,uB;QAAA,UAAkB,C;MAAG,6B;QAAA,gBAA8B,I;MAAM,sB;QAAA,SAAkB,I;MAAM,uB;QAAA,UAAoB,K;MAAO,wB;QAAA,WAAqB,K;MAAO,sB;QAAA,SAAmB,K;MAAO,uB;QAAA,UAAoB,K;MAAO,gC;QAAA,mBAA6B,K;MAAO,gC;QAAA,mBAA6B,K;MAAO,0B;QAAA,aAAuB,K;MAAO,8B;QAAA,iBAA2B,K;MAAO,6B;QAAA,gBAA0B,K;MAAO,+B;QAAA,kBAA4B,K;MAAO,kC;QAAA,qBAA+B,K;MAAO,6B;QAAA,gBAA0B,K;MAAO,8B;QAAA,iBAA2B,K;MAAO,kC;QAAA,qBAA+B,K;MAAO,oB;QAAA,OAAgB,I;MAAM,sB;QAAA,SAAE,C;MAAG,uB;QAAA,UAAoB,K;MAAO,0B;QAAA,aAAuB,K;MAAO,wB;QAAA,WAAqB,K;MACl/B,QAAQ,E;MACR,EAAE,WAAF,IAAiB,S;MACjB,EAAE,OAAF,IAAa,K;MACb,EAAE,QAAF,IAAc,M;MACd,EAAE,UAAF,IAAgB,Q;MACHB,EAAE,oBAAF,IAA0B,kB;MAClB,EAAE,OAAF,IAAa,K;MACb,EAAE,OAAF,IAAa,K;MACb,EAAE,OAAF,IAAa,K;MACb,EAAE,aAAF,IAAmB,W;MACnB,EAAE,WAAF,IAAiB,S;MACjB,EAAE,SAAF,IAAe,O;MACf,EAAE,SAAF,IAAe,O;MACf,EAAE,SAAF,IAAe,O;MACf,EAAE,SAAF,IAAe,O;MACf,EAAE,SAAF,IAAe,O;MACf,EAAE,QAAF,IAAc,M;MACd,EAAE,SAAF,IAAe,O;MACf,EAAE,eAAF,IAAqB,a;MACrB,EAAE,QAAF,IAAc,M;MACd,EAAE,SAAF,IAAe,O;MACf,EAAE,UAAF,IAAgB,Q;MACHB,EAAE,QAAF,IAAc,M;MACd,EAAE,SAAF,IAAe,O;MACf,EAAE,kBAAF,IAAwB,gB;MACxB,EAAE,kBAAF,IAAwB,gB;MACxB,EAAE,YAAF,IAAkB,U;MACIB,EAAE,gBAAF,IAAsB,c;MACtB,EAAE,eAAF,IAAqB,a;MACrB,EAAE,iBAAF,IAAuB,e;MACvB,EAAE,oBAAF,IAA0B,kB;MAClB,EAAE,eAAF,IAAqB,a;MACrB,EAAE,gBAAF,IAAsB,c;MACtB,EAAE,oBAAF,IAA0B,kB;MAClB,EAAE,MAAF,IAAY,I;MACZ,EAAE,QAAF,IAAc,M;MACd,EAAE,SAAF,IAAe,O;MACf,EAAE,YAAF,IAAkB,U;MACIB,EAAE,UAAF,IAAgB,Q;MACHB,OAAO,C;K;6GCzBX,0C;MACwC,oB;QAAA,OAAiB,I;MAAM,sB;QAAA,SAAmB,K;MAAO,uB;QAAA,UAAoB,K;MAAO,uB;QAAA,UAAoB,K;MACpI,QAAQ,E;MACR,EAAE,MAAF,IAAY,I;MACZ,EAAE,QAAF,IAAc,M;MACd,EAAE,SAAF,IAAe,O;MACf,EAAE,SAAF,IAAe,O;MACf,OAAO,C;K;4EAmIX,4B;MACkE,iBAAY,KAAZ,C;K;4EAEIE,qC;MAC2E,UAAAY,KAAZ,IAAqB,O;K;4EAEiBhG,4B;MACuE,iBAAY,KAAZ,C;K;4EAEvE,qC;MAC+E,UAAAY,KAAZ,IAAqB,O;K;4EAEiBpG,4B;MACuE,iBAAY,KAAZ,C;K;4EAEvE,qC;MAC+E,UAAAY,KAAZ,IAAqB,O;K;4EAEiGpG,4B;MACoE,iBAAY,KAAZ,C;K;2EAEpE,qC;MAC4E,UAAAY,KAAZ,IAAqB,O;K;4EAEkG,4B;MAC6E,iBAAY,KAAZ,C;K;4EAE7E,qC;MACqF,UAAAY,KAAZ,IAAqB,O;K;4EAgP1G,4B;MACqE,iBAAY,KAAZ,C;K;4EAErE,qC;MAC6E,UAAAY,KAAZ,IAAqB,O;K;uFH/6BIG,+H;MAC8B,sB;QAAA,SAAkB,S;MAAW,uB;QAAA,UAAmB,S;MAAW,oB;QAAA,OAAgB,S;MAAW,wB;QAAA,WAAoB,S;MAAW,8B;QAAA,iBAA0B,S;MAAW,oB;QAAA,OAAqB,S;MAAW,2B;QAAA,cAAmC,S;MAAW,qB;QAAA,QAAuB,S;MAAW,wB;QAAA,WAA6B,S;MAAW,yB;QAAA,YAAqB,S;MAAW,yB;QAAA,YAAsB,S;MAAW,wB;QAAA,WAAe,S;MAC5Z,QAAQ,E;MACR,EAAE,QAAF,IAAc,M;MACd,EAAE,SAAF,IAAe,O;MACf,EAAE,MAAF,IAAY,I;MACZ,EAAE,UAAF,IAAgB,Q;MACHB,EAAE,gBAAF,IAAsB,c;MACtB,EAAE,MAAF,IAAY,I;MACZ,EAAE,aAAF,IAAmB,W;MACnB,EAAE,OAAF,IAAa,K;MACb,EAAE,UAAF,IAAgB,Q;MACHB,EAAE,WAAF,IAAiB,S;MACjB,EAAE,WAAF,IAAiB,S;MACjB,EAAE,QAAF,IAAc,Q;MACd,OAAO,C;K;yFA0CX,uC;MAC+B,sB;QAAA,SAAiB,G;MAAK,0B;QAAA,aAAsB,I;MAAM,uB;QAAA,UAAmB,S;MACHG,QAAQ,E;MACR,EAAE,QAAF,IAAc,M;MACd,EAAE,YAAF,IAAkB,U;MACIB,EAAE,SAAF,IAAe,O;MACf,OAAO,C;K;qFASgD,qB;MAAQ,OAAAG,E;K;mFAEX,qB;MAAQ,OAAQ,O;K;iFAEjB,qB;MAAQ,OAAO,M;K;mFAEd,qB;MAAQ,OAAQ,O;K;qFAEf,qB;MAAQ,OAAS,Q;K;mFAEIB,qB;MAAQ,OAAQ,O;K;mFAEhB,qB;MAAQ,OAAQ,O;K;mFAEhB,qB;MAAQ,OAAQ,O;K;qFAQF,qB;MAAQ,OAAAG,E;K;yFAER,qB;MAAQ,OAAW,U;K;mFAEtB,qB;MAAQ,OAAQ,O;K;mFAEjB,qB;MAAQ,OAAO,M;K;qFAEd,qB;MAAQ,OAAQ,O;K;yFAEb,qB;MAAQ,OAAW,U;K;mFAEtB,qB;MAAQ,OAAQ,O;K;qFAEf,qB;MAAQ,OAAS,Q;K;qFAEjB,qB;MAAQ,OAAS,Q;K;uFAEjB,qB;MAAQ,OAAS,Q;K;mGAEV,qB;MAAQ,OAAgB,e;K;iGAEzB,qB;MAAQ,OAAe,c;K;qFAE9B,qB;MAAQ,OAAQ,O;K;qFAEf,qB;MAAQ,OAAS,Q;K;iFAEnB,qB;MAAQ,OAAO,M;K;yFAQzB,qB;MAAQ,OAAW,U;K;+FAEhB,qB;MAAQ,OAAc,a;K;uFAE1B,qB;MAAQ,OAAU,S;K;iFAErB,qB;MAAQ,OAAO,M;K;iFAQD,qB;MAAQ,OAAO,M;K;iGAER,qB;MAAQ,OAAc,a;K;uFAE1B,qB;MAAQ,OAAU,S;K;yFAQ9B,qB;MAAQ,OAAU,S;K;yFAEjB,qB;MAAQ,OAAW,

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C3ZrE,0E;MACoC,gC;QAAA,mBAA6B,K;MAAO,sB;QAAA,SAakB,C;MAAG,qB;QAAA,QAAiB,C;MAAG,uB  
;QAAA,UAAoB,K;MAAO,0B;QAAA,aAAuB,K;MAAO,wB;QAAA,WAAqB,K;MAC3L,QAAQ,E;MACR,EAAE  
,kBAAF,IAAwB,gB;MACxB,EAAE,QAAF,IAAc,M;MACd,EAAE,OAAF,IAAa,K;MACb,EAAE,SAAF,IAAe,O;  
MACf,EAAE,YAAF,IAAkB,U;MACIB,EAAE,UAAF,IAAgB,Q;MACHB,OAAO,C;K;mFAS8E,qB;MAAQ,OAA  
G,E;K;+FAEL,qB;MAAQ,OAAc,a;K;iFAE7B,qB;MAAQ,OAAO,M;K;yFAEX,qB;MAAQ,OAAW,U;K;+EAEvB,  
qB;MAAQ,OAAO,M;K;+EAEf,qB;MAAQ,OAAO,M;K;ICvHnE,6B;MAAC,qB;QAAA,8C;MAAA,kB;K;IACjC,2  
C;MAAA,e;MAAA,iB;MAAA,uB;K;IAAA,yC;MAAA,4C;O;MAKI,0E;MAEA,sE;K;;IAFA,kD;MAAA,+B;MAA  
A,0C;K;;IAEA,gD;MAAA,+B;MAAA,wC;K;;IAPJ,qC;MAAA,yF;K;;IAAA,0C;MAAA,a;AAAA,S;UAAA,+C;aA  
AA,O;UAAA,6C;gBAAA,8D;;K;;IAyBmC,sC;MACnC,8B;K;;IAMqC,sC;MACrC,8B;K;;IC1DJ,iC;K;;ICMA,4B;  
K;;ICCA,qC;K;;IA4BA,+B;K;;ICRqC,uC;MACjC,uB;QAAA,UAAsB,E;MACtB,qB;QAAA,+C;MADA,sB;MACA  
,kB;K;IAEA,4C;MAAA,e;MAAA,iB;MAAA,uB;K;IAAA,0C;MAAA,6C;O;MAKI,4E;MAGA,wE;K;;IAHA,mD;  
MAAA,gC;MAAA,2C;K;;IAGA,iD;MAAA,gC;MAAA,yC;K;;IARJ,sC;MAAA,2F;K;;IAAA,2C;MAAA,a;AAAA,  
S;UAAA,gD;aAAA,O;UAAA,8C;gBAAA,+D;;K;;IAyByB,4B;MACzB,8B;K;;IC/C4C,8B;K;kDAI5C,mB;MAA6  
D,c;;QhI4/C7C,Q;QADhB,IAAI,mCAAsB,cAA1B,C;UAAqC,aAAO,K;UAAP,e;SACrB,sB;QAaHb,OAAgB,cAA  
hB,C;UAAgB,2B;UAAM,IgI5/C6C,OhI4/CB,SgI5/C+B,UhI4/C7C,C;YAAwB,aAAO,I;YAAP,e;;QAC9C,aAAO,  
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,UAA1B,C;UAAqC,aAAO,I;UAAP,e;SACrB,OgIp+CZ,QhIo+CY,W;QAaHb,OAAgB,cAAhB,C;UAAgB,yB;UA  
AM,IAAI,CgIp+CP,oBhIo+CkB,OgIp+CIB,ChIo+CG,C;YAAyB,aAAO,K;YAAP,e;;QAC/C,aAAO,I;;MgIr+CH,i  
B;K;2CAEJ,Y;MAAkC,qBAAQ,C;K;IAEqB,qE;MAAA,qB;QAC3D,OAAI,OAAO,uBAAX,GAAiB,mBAAjB,GA  
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A7B,C;K;2CAIIC,Y;MAI4C,uBAAgB,IAAhB,C;K;mDAE5C,iB;MAI4D,yBAAgB,IAAhB,EAAsB,KAAtB,C;K;;I  
C/BhE,8B;MAAA,e;MAAA,iB;MAAA,uB;K;IAAA,4B;MAAA,+B;O;MACI,4C;MACA,kD;MACA,0C;MACA,8  
C;K;;IAHA,mC;MAAA,kB;MAAA,2B;K;;IACA,sC;MAAA,kB;MAAA,8B;K;;IACA,kC;MAAA,kB;MAAA,0B;K  
;;IACA,oC;MAAA,kB;MAAA,4B;K;;IAJJ,wB;MAAA,sH;K;;IAAA,6B;MAAA,a;AAAA,O;UAAA,gC;aAAA,U;U  
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Q,WAAjC,C;OuIZC,QAAM,oBAAN,M;aACH,M;UAAc,Y;UAAAd,K;aACA,O;UAAe,W;UAAf,K;gBACQ,wC;UA  
HL,K;;MAAP,W;K;sCAOJ,Y;MAIW,Q;MAHP,IAAI,CAAC,cAAL,C;QAAGB,MAAM,6B;MACtB,mD;MAEA,O  
AAO,2F;K;4DAGX,Y;MACI,iD;MACA,kB;MACA,OAAO,kD;K;+CAeX,iB;MAII,2BAAY,K;MACZ,gD;K;sCA  
GJ,Y;MAII,+C;K;;ICIDkC,wB;MAoFtC,oC;MAPFgE,6B;K;sCAIhE,Y;MAAuC,0C;K;2CAEvC,mB;MAAwD,uB;;  
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tE,C;YACI,qBAAO,QAAS,Y;YAAhB,uB;;QAGR,qBAAO,E;;MkI5TqD,yB;K;0CAE5D,Y;MAA+C,+CAAiB,CA  
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EAAyB,YAAzB,C;MAEA,OAAO,wBAAK,mBAAy,KAAZ,IAAL,C;K;wEAGY,Y;MAAQ,mB;K;;oCAGnC,iB;M  
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X,iE;MAAX,OAAO,+B;K;;IAO0B,sD;MAHzC,oB;MAGwD,iD;MAGhD,gEAAmB,KAAAnB,EAA0B,WAAkB,KA  
A5C,C;MACA,eAAa,K;K;0DAGjB,Y;MAAsC,sBAAQ,C;K;wDAE9C,Y;MAAgC,mB;K;uDAEhC,Y;MACI,IAAI,  
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,iBA Ae,C;MACL,mB;MAAV,OAAU,cAAV,C;QAAU,mB;QACN,aAAW,MAAK,UAAAL,SAAiB,6DAAiB,CAAI  
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AO,K;MAEjC,oBAAoB,KAAM,W;MACb,mB;MAAb,OAAa,cAAb,C;QAAa,sB;QACT,gBAAgB,aAAc,O;QAC9  
B,IAAI,cAAQ,SAAR,CAAJ,C;UACI,OAAO,K;;MAGf,OAAO,I;K;;IAjDf,8C;MAAA,6C;QAAA,4B;OAAA,sC;K  
;;ICnFwC,uB;MAyHxC,mC;MAzCA,uBAC6B,I;MAMc7B,yBACsC,I;K;8CAnHtC,e;MACI,OAAO,6BAAc,GAA  
d,S;K;gDAGX,iB;MAAwE,gBAAR,Y;MAAQ,c;;QnIo/CxD,Q;QADhB,IAAI,wCAAsB,mBAA1B,C;UAAqC,aAA  
O,K;UAAP,e;SACrB,2B;QAAhB,OAAGB,cAAhB,C;UAAgB,yB;UAAM,ImIp/CwD,OnIo/C1C,OmIp/C6C,MAA  
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;QAA+B,OAAO,K;MACtC,UAAU,KAAM,I;MACHb,YAAAY,KAAM,M;M/IwMO,Q;M+IvMzB,e/IuM4C,CAAnB  
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/IiNqB,U;Q+IjND,U/IiNoB,CAAnB,uDAAmB,oB+IjNP,G/IiNO,C;O+IjN5C,W;QACI,OAAO,K;OAGX,OAAO,I;  
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,wCAAsB,mBAA1B,C;UAAqC,aAAO,I;UAAP,e;SACrB,2B;QAAhB,OAAGB,cAAhB,C;UAAgB,yB;UAAM,IAA  
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GJ,e;MAAwC,Q;MAAA,4CAAc,GAAd,8B;K;qCAGxC,Y;MAK+B,OAAQ,SAAR,YAAQ,C;K;oCAEvC,Y;MAAk  
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,+CAAY,OAAZ,C;K;IAI3C,sG;MAAA,kD;K;8FACH,Y;MAAkC,OAAA,0BAAc,U;K;2FACHD,Y;MAAyB,OAA  
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B,K;K;;+DAb5D,Y;MACI,IAAI,4BAAJ,C;QACI,+E;OAcJ,OAAO,mC;K;IAOwD,uD;MAAA,qB;QAAE,2CAAS,  
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B,iCAA7B,C;K;+CAE1C,iB;MAAuD,+BAAS,KAAM,IAAf,IAAsB,GAAtB,GAA4B,wBAAS,KAAM,MAAf,C;K;  
+CAEnF,a;MAAwC,OAAI,MAAM,IAAV,GAAgB,YAAhB,GAAoC,SAAF,CAAE,C;K;IAWtD,4E;MAAA,wC;M  
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,OnI8GxC,OmI9G2C,IAAH,MnI8GtD,C;YAAwB,qBAAO,O;YAAP,uB;;QAC9C,qBAAO,I;;MmI/G+C,yB;K;IAE  
tD,iC;MAAA,qC;K;4DAEI,a;MAAiE,gC;MAAX,OAAU,CAAC,kBAAN,CAAM,0DAAmB,CAApB,KAA4B,oBA  
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;K;mCACtE,Y;MAA+B,Q;K;mCAC/B,Y;MAAkC,W;K;6DAEX,Y;MAAQ,Q;K;kCAC/B,Y;MAAkC,W;K;yCACI



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GA4D0C,EA5DxB,CA4DwB,CAAX,GAA6C,UA5DvE,WA4DuE,6DAA5D,EA5DE,CA4DF,C/FiGjD,C;;Q+FIGA  
,OACY,W;O;KA7BhB,C;iFAgCA,yB;MAAA,gB;MAAA,8B;M/FhFA,wE;M+FgFA,qD;QA7FW,kB/FqBiD,oB;Q  
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B;K;;wCAN7D,Y;MAMsC,iB;K;wCANtC,Y;MAM6D,iB;K;0CAN7D,wB;MAAA,wBAMsC,qCANtC,EAM6D,q  
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OAAV,C;;K;IAMY,oC;MAAC,0B;MACnC,eAAoB,C;K;yCACpB,Y;MAAwC,OAAA,eAAS,U;K;sCACjD,Y;MA  
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B;MAAA,4E;MAAA,gB;MAAA,8B;MAAA,+C;QAUiC,Q;QAA7B,OAA6B,wCAAqB,QAAS,aAA9B,0D;O;KAV  
jC,C;wFAYA,yB;MAAA,4E;MAAA,gB;MAAA,8B;MAAA,+C;QAWiC,Q;QAA7B,OAA6B,wCAAqB,QAAS,aA  
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C,4BqJ9O+C,GrJ8O/C,CAAtB,C;QACI,2BqJ/OwE,mB;;QrJkPxE,2BAAO,sE;;MqJlPoC,+B;K;;IAGN,mD;MAAC,  
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CAC/B,Y;MAAkC,W;K;2CAEIC,e;MAA+C,Y;K;6CAC/C,iB;MAAsD,Y;K;mCACTD,e;MAAwC,W;K;+DACy,Y;  
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Bb,aZnvB0B,SYmvBtB,CAAY,OAAZ,CAAJ,EAAYC,OZnvBC,MYmvB1C,C;;MZnvBhB,OAA6B,W;K;IAGjC,k  
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B,OAAO,W;K;qFAGX,yB;MAAA,wE;MAAA,uC;QAOW,kBAAS,oB;QAFa,Q;QAAA,OA3HoE,iBAAQ,W;QA2  
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AAJ,CAAJ,C;YAAe,SAAS,I;;QAC5B,OAAO,M;;K;IAKnB,uC;MAKiB,Q;MADb,aAAsB,K;MACT,0B;MAAb,O  
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OAAO,yBAAGB,OAAT,QAAS,CAAhB,C;K;IAGX,0C;MAIW,iBAAmB,gCAAT,QAAS,EAAgC,SAAhC,C;MAI  
HG,Q;MAKH7B,OAIH2D,CAA9B,sEAA8B,oBAAU,UAAP,C;K;IAqH/D,0C;MAII,UAAmB,YAAT,QAAS,C;M  
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Q7J6gNA,YAAQ,CAwER,C6JrlNA,IAAyB,4BAAmB,UAAT,QAAS,CAAnB,C;K;IAGpC,0C;MAIW,iBAAmB,g  
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C;MAII,I7JukNO,E6JvknH,Q7J+/MG,YAAQ,CAwER,C6JvknP,C;QACI,OAAO,4BAAmB,UAAT,QAAS,CAAn  
B,C;;QAEp,OAAO,wB;K;IAGf,0C;MAII,UAAmB,YAAT,QAAS,C;MACnB,IvJ6BwD,CuJ7BpD,GvJ6BqD,UuJ7  
BzD,C;QACI,OAAO,4BAAU,GAAP,C;;QAEp,OAAO,wB;K;IAGf,kC;MACI,avJsBwD,CAAC,mB;MuJrBzD,iB;  
MACA,OAAO,M;K;IAIX,2C;MAKkF,gCAAc,SAAd,EAAyB,IAAzB,C;K;IAEIF,2C;MAKkF,gCAAc,SAAd,EAA  
yB,KAAzB,C;K;IAEIF,sE;MACI,iBAaA,KAAb,C;M5IjgB,kB4ImJX,oB;MACD,OAAO,qBAAP,C;QACI,IAAI,U  
AAU,kBAAV,6BAAJ,C;UACI,oB;UACA,WAAS,I;SAGrB,OAAO,Q;K;IAIX,uC;MAK+E,kBAAhB,0B;MAAwB,  
8B;MAAxB,05IrrpD,W;K;oF4IwJX,4B;MAM6D,kCAAS,KAAT,C;K;IAE7D,gC;MAKiD,IAAI,mBAAJ,C;QAAe  
,MAAM,2BAAuB,gBAAvB,C;;QAArB,OAAmE,2BAAS,CAAT,C;K;IAEPH,sC;MAKwD,OAAI,mBAAJ,GAAe,I  
AAf,GAAyB,2BAAS,CAAT,C;K;IAEjF,+B;MAKgd,IAAI,mBAAJ,C;QAAe,MAAM,2BAAuB,gBAAvB,C;;QAA  
rB,OAAmE,2BAAS,2BAAT,C;K;IAEnH,qC;MAKuD,OAAI,mBAAJ,GAAe,IAAf,GAAyB,2BAAS,2BAAT,C;K;I  
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E9E,wE;MAEgB,UAGS,MAHT,EAcY,MAZ,EAc6B,M;MAfzC,IAAI,uCAAJ,C;QACI,OAAoC,cAA5B,sEAA4B,  
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K,UAAL,EAAmB,OAAnB,C;QAEJ,+B;;MAEJ,IAAI,aAAa,cAAjB,C;QACwB,oC;QAAiB,mB;QAArC,oE;UACI,  
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AK,CAAL,CAAV,C;QACA,sBAAK,CAAL,EAAU,IAAV,C;;K;ICvTsC,wC;MAAkC,uB;MAAjC,0B;K;wEACpB,

Y;MAAQ,OAAA,eAAS,K;K;iDACxC,iB;MAAkC,mCAAS,0BAAoB,KAApB,CAAT,C;K;;IAGT,gC;MAAyC,8B;  
MAAxC,0B;K;gEACH,Y;MAAQ,OAAA,eAAS,K;K;yCACxC,iB;MAAkC,mCAAS,0BAAoB,KAApB,CAAT,C;K;  
;mCAEIC,Y;MAAuB,eAAS,Q;K;8CACHC,iB;MAAuC,OAAA,eAAS,kBAAS,0BAAoB,KAApB,CAAT,C;K;yCA  
EhD,0B;MAA8C,OAAA,eAAS,aAAI,0BAAoB,KAApB,CAAJ,EAAgC,OAAhC,C;K;yCACvD,0B;MACI,eAAS,a  
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,C;QAAA,OAA2B,8BAAy,KAAZ,I;;QAAuB,MAAM,8BAA0B,mBAAgB,KAAhB,2BAA0C,gBAAG,2BAAH,C  
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AK+C,gCAAqB,SAArB,C;K;IAE/C,iC;MAM6D,wBAAa,SAAb,C;K;;;;IIJtC7D,oD;MAQuF,wC;K;IARvF,8CASI  
Y;MAAuC,8B;K;IAT3C,gF;ImJc8G,wC;MAAA,mB;QAAE,kBAAS,aAAT,C;O;K;IAThH,yB;MASqG,oCAAS,sB  
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8B;O;MAT3C,8E;MmJmB2I,qD;QAAA,mB;UAAE,gBAAS,qBAAT,C;S;O;MAH7I,gC;QAGkI,kCAAS,mCAAT,  
C;O;KAHII,C;IAKA,2B;MAQI,eAAe,6B;MACf,oBAA0B,+BAAN,KAAM,EAAwC,QAAxC,EAA+D,QAA/D,C;  
MAC1B,OAAO,Q;K;8FAGX,yB;MAAA,kD;MAAA,gC;QAGkI,gBAAS,aAAT,C;O;KAHII,C;IAGB0C,yB;K;+CA  
oBtC,kC;MAOI,IAAI,uCAA0B,QAAS,UAAvC,C;QAAkD,M;MACID,OAAO,sBAAS,QAAS,WAAIB,e;K;+CAG  
X,kC;MAQqD,6BAAS,QAAS,WAAIB,e;K;;;;IAezD,mC;MAA2C,wB;MACvC,eAAoB,C;MACpB,mBAA4B,I;  
MAC5B,sBAAyC,I;MACzC,gBAAoC,I;K;gDAEpC,Y;MACI,OAAO,IAAP,C;QACI,QAAM,YAAN,C;eACI,C;Y  
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A,C;YAAc,OAAO,K;eACrB,C;eAAA,C;YAAgC,OAAO,I;kBAC/B,MAAM,yB;;QAGIB,eAAQ,C;QACR,WAAW  
,4B;QACX,gBAAW,I;QACX,ItGhGR,oBD6CQ,WuGmDY,kBvGnDZ,CC7CR,C;;K;6CsGoGA,Y;MACU,IASe,I;  
MATrB,QAAM,YAAN,C;aACI,C;aAAA,C;UAA5C,OAAO,qB;aAC7C,C;UACI,eAAQ,C;UACR,OAAO,kCAAe,  
O;aAE1B,C;UACI,eAAQ,C;UACR,aACa,mF;UACb,mBAAy,I;UACZ,OAAO,M;gBAEH,MAAM,yB;;K;uDAltB,  
Y;MACI,IAAI,CAAC,cAAL,C;QAAGB,MAAM,6B;;QAA8B,OAAO,W;K;2DAG/D,Y;MAA4C,QAAM,YAAN,C;  
aACxC,C;UADwC,OAC1B,6B;aACd,C;UAFwC,OAExB,6BAAsB,sBAAtB,C;gBAFwB,OAGhC,6BAAsB,uCAA  
oC,YAA1D,C;;K;IAOqC,4E;MAAA,oB;QACzC,wCAAW,C;QAAX,OACA,yB;O;K;oDALR,+B;MACI,mBAAy,  
K;MACZ,eAAQ,C;MACR,OAA6C,0CAAtC,c;K;IAUsC,+E;MAAA,oB;QACzC,wCAAW,C;QAAX,OACA,yB;O;  
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A,yB;MAAA,kC;MAAA,0C;MAAA,kD;QAQuF,wC;O;MARvF,4CASI,Y;QAAuC,8B;O;MAT3C,8E;MAAA,2B;  
QAQuF,2C;O;KARvF,C;IAiBgE,+C;MAAA,mB;QAAE,sB;O;K;IALIE,kC;MAKuD,OAAkB,2CAAT,+BAAS,E;K  
;IAEzE,8B;MAK6D,OAAI,QZ6oNtD,YAAQ,CY7oN0C,GAAwB,eAAxB,GAAsD,WAAT,QAAS,C;K;IAEnH,yB;  
MAG8C,kC;K;IAE9C,yB;MAAA,6B;K;uCACI,Y;MAA6C,kC;K;2CAC7C,a;MAA4B,kC;K;2CAC5B,a;MAA4B,k  
C;K;;IAHhC,qC;MAAA,oC;QAAA,mB;OAAA,6B;K;oFAMA,yB;MAAA,2D;MAAA,4B;QAM4D,uCAAQ,e;O;  
KANpE,C;IAGB4F,mH;MAAA,wC;MAAA,6B;MAAA,yB;MAAA,wC;MAAA,wD;MAAA,kC;K;;;;kDAAA,Y;;;;  
cACxF,eAAe,uBAAa,W;cAC5B,IAAI,QAAS,UAAb,C;gBACI,gB;gCAAA,sCAAS,QAAT,O;oBAAA,2C;yBAAA  
,yB;gBAAA,Q;;gBAEA,gB;gCAAA,sCAAS,iCAAT,O;oBAAA,2C;yBAAA,yB;gBAAA,Q;;;;cAJJ,W;;cAAA,W;;  
;;;;K;IADwF,gE;MAAA,yD;uBAAA,uG;YAAA,S;iBAAA,Q;;iBAAA,uB;O;K;IAP5F,4C;MAOmF,gBAAS,  
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UAAhB,C;QACI,WAAW,aAAS,O;QACpB,IAAI,wCAAU,IAAV,MAAmB,sCAAvB,C;UACI,gBAAW,I;UACX,i  
BAAy,C;UACZ,M;;MAGR,iBAAy,C;K;8DAGhB,Y;MASW,Q;MARP,IAAI,mBAAa,EAAjB,C;QACI,iB;MACJ,  
IAAI,mBAAa,CAAjB,C;QACI,MAAM,6B;MACV,aAAa,a;MACb,gBAAW,I;MACX,iBAAy,E;MAEZ,OAAO,yE

;K;iEAGX,Y;MACI,IAAI,mBAAa,EAAjB,C;QACI,iB;MACJ,OAAO,mBAAa,C;K;;2CAhC5B,Y;MAAuC,yD;K;;I  
A2C3C,qD;MAAY,0B;MAAmC,gC;K;IACJ,gF;MAAA,0D;MACnC,gBA Ae,oCAAS,W;K;iEACxB,Y;MACI,OA  
AO,6CAA Y,aAAS,OAArB,C;K;oEAGX,Y;MACI,OAAO,aAAS,U;K;;8CAPxB,Y;MAAuC,4D;K;qDAWvC,oB;M  
ACI,OAAO,uBAA4B,eAA5B,EAA5C,kBAAtC,EAAmD,QAAnD,C;K;;IAUf,4D;MAAY,0B;MAAmC,gC;K;IACJ,  
8F;MAAA,wE;MACnC,gBA Ae,2CAAS,W;MACxB,aAAY,C;K;wEACZ,Y;MAC0C,Q;MAAtC,OAAO,oDAAY,o  
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ARxB,Y;MAAuC,mE;K;;IAkB3C,oC;MAAY,0B;K;IAC6C,wE;MACjD,gBA Ae,gCAAS,W;MACxB,aAAY,C;K;6  
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D,C;K;gEAGX,Y;MACI,OAAO,aAAS,U;K;;0CARxB,Y;MAAqD,wD;K;;IAmBzD,0D;MACI,4B;MACA,4B;MA  
CA,4B;K;IAEuC,sE;MAAA,gD;MACnC,iBAAgB,gCAAU,W;MAC1B,iBAAgB,gCAAU,W;K;4DAC1B,Y;MACI,  
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U,U;K;;yCARhD,Y;MAAuC,uD;K;;IAC3C,6D;MACI,0B;MACA,gC;MACA,0B;K;IAEuC,4E;MAAA,sD;MACnC,  
gBA Ae,kCAAS,W;MACxB,oBAAiC,I;K;+DAEjC,Y;MACI,IAAI,CAAC,2BAAL,C;QACI,MAAM,6B;MACV,O  
AAO,gCA Ae,O;K;kEAG1B,Y;MACI,OAAO,2B;K;+EAGX,Y;MACQ,Q;MAAJ,IAAI,iEAA2B,KAA/B,C;QACI,o  
BA Ae,I;MAEnB,OAAO,yBAAP,C;QACI,IAAI,CAAC,aAAS,UAA d,C;UACI,OAAO,K;;UAEP,cAAc,aAAS,O;U  
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AO,I;;MAInB,OAAO,I;K;;4CA9Bf,Y;MAAuC,0D;K;;IA+Cd,qD;MACzB,0B;MACA,8B;MACA,0B;MC5QA,I  
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b,IAAIC,C;K;IAEzC,8D;MAAA,wC;MAEtB,gBA Ae,2BAAS,W;MACxB,gBA Ae,C;K;0DAEf,Y;MAEI,OAAO,gB  
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E5B,gE;MACnC,YAAW,yB;MACX,gBA Ae,4BAAS,W;K;yDAExB,Y;MACI,IAAI,cAAQ,CAAZ,C;QACI,MAA  
M,6B;MACV,6B;MACA,OAAO,aAAS,O;K;4DAGpB,Y;MACI,OAAO,YAAO,CAAP,IAAY,aAAS,U;K;;sCAZpC  
,Y;MAAuC,oD;K;;IASB3C,gD;MACI,0B;MACA,4B;K;IAEuC,0E;MAAA,oD;MACnC,gBA Ae,iCAAS,W;MACx  
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MAGb,gBAAW,I;MACX,iBAAY,E;MACZ,OAAO,M;K;iEAGX,Y;MACI,IAAI,mBAAa,EAAjB,C;QACI,iB;MA  
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,e;UACV,IAAW,IAAP,0CAAkB,KAAIB,CAAJ,C;YAA6B,OAAO,K;;K;mCAKhD,Y;MAGyC,6BAAS,CAAT,M  
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;MAOoD,+BAAW,GAAX,EAAGB,KAhB,C;K;0CAEpD,uB;MAYY,Q;MAFR,mBAAiB,IAAjB,EAAuB,KAAvB  
,C;MACA,WAAW,QAAQ,I;MACX,IAAS,WAAI,IAAK,CAAL,IAA0B,SAAL,IAAK,CAA1B,IAA8C,SAAN,KA  
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C;QAAA,wB;UAAW,OAAA,aAAK,KAAL,C3B8FV,K;S;O;M2BzGvC,6B;QAWI,OAAO,oBAAW,+BAAU,IAA  
V,GAAgB,uBAAhB,CAAX,C;O;KAXX,C;kFAcA,oB;MAGqE,e;K;I1BnE5C,oB;MAErB,4B;MAFwD,gB;K;IAEx  
D,0B;MAAA,8B;MACI,iBAGmC,SAAK,CAAL,C;MAEnC,iBAGmC,SAAK,EAAL,C;MAEnC,kBAGmC,C;MAE  
nC,iBAGkC,E;K;;;IANtC,sC;MAAA,qC;QAAA,oB;OAAA,8B;K;oGAsBA,yB;MDgLA,6B;MChKA,8C;MAhBA  
,wB;QAM0D,OAIbQ,YAAY,IAAK,KAAjB,EAA6B,CDkK5D,cCnLsC,KDmL5B,KAAL,GAAiB,GAAtB,CClK4  
D,MAA7B,C;O;KAvBIE,C;oGAQA,yB;MCyKA,6B;MDjKA,8C;MARA,wB;QAM2D,OASO,YAAY,IAAK,KAAj  
B,EAA6B,CCmK5D,cD5KuC,KC4K7B,KAAL,GAAiB,KAAtB,CDnK4D,MAA7B,C;O;KafIE,C;gGAQA,yB;MA  
AA,8C;MAAA,wB;QAOkE,mBAAy,IAAK,KAAjB,EAAuB,KAAM,KAA7B,C;O;KAPIE,C;oGASA,yB;MAyKA,  
kBAS6D,sB;MAT7D,+B;M6B1KA,gD;M7BCA,wB;QAM0D,O6BAS,aAAkB,C7B4KhD,eAAW,oBAAL,SAAK,  
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,C;O;K7BFxD,C;4FAIA,yB;MDqHA,6B;MCRHA,wB;QAEuD,OAMD,cAAe,YAAV,IAAK,KAAM,EAAY,CDsH9  
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HA,wB;QAEwD,OAGF,cAAe,YAAV,IAAK,KAAM,EAAY,CCuH9C,cD1HgC,KC0HtB,KAAL,GAAiB,KAAtB,C  
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B,C;O;K7BFxD,C;wFAIA,yB;MDwGA,6B;MCIGA,4C;MANA,wB;QAEqD,OAMD,WAAW,IAAX,EDyGjB,cC/  
G2B,KD+GjB,KAAL,GAAiB,GAAtB,CCzGiB,C;O;KARpD,C;wFAGA,yB;MCsGA,6B;MDnGA,4C;MAHA,wB;  
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6D,sB;MAT7D,+B;M6BjHA,8C;M7BAA,wB;QAEsD,O6BAA,Y7BwHjB,eAAW,oBAAL,SAAK,CAAL,iBAAN,  
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Ac,IAAd,ED4FjB,cCIG2B,KDkGjB,KAAL,GAAiB,GAAtB,CC5FiB,C;O;KARpD,C;wFAGA,yB;MCyFA,6B;MDt  
FA,kD;MAHA,wB;QAEsD,OAGF,cAAc,IAAd,EC6FjB,cDhG4B,KCgGIB,KAAL,GAAiB,KAAtB,CD7FiB,C;O;K  
ALpD,C;wFAGA,yB;MAAA,kD;MAAA,wB;QAEoD,qBAAc,IAAd,EAAoB,KAApB,C;O;KAFpD,C;wFAGA,yB;  
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B;MAAA,2B;QAEmd,qBAAK,aAAS,QAAd,C;O;KAFnD,C;wFAGA,yB;MAAA,6B;MAAA,2B;QAEmd,qBAA  
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,C;O;KAFhD,C;wFAGA,yB;MAAA,6B;MAAA,wB;QAEiD,qBAAK,IAAK,KAAL,GAAC,KAAM,KAAzB,C;O;K  
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+B;MAAA,mB;QASqC,sBAAW,oBAAL,SAAK,CAAL,iBAAN,C;O;KATrC,C;gFAWA,yB;MASA,gD;MATA,m  
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4C,O3BiRT,S2BjRS,aAAQ,KAAR,C3BiRT,C;K;sC2B/QnC,wB;MAOI,aAAQ,KAAR,IAAiB,K3BmKY,K;K;6D2  
B/JH,Y;MAAQ,OAAA,YAAQ,O;K;mCAE9C,Y;MACwD,8BAAS,YAAT,C;K;IAEIC,mC;MAAgC,uB;MAA/B,o  
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B,c;;QX+7CvB,U;QADhB,IAAI,wCAAsB,mBAA1B,C;UAAqC,aAAO,I;UAAp,e;SACrB,6B;QAAhB,OAAgB,gB  
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,UAAf,qBAAU,S;K;IAE5C,+B;MAAA,mC;MACI,aAC8B,cAAU,4BAAK,UAAf,EAA0B,4BAAK,UAA/B,C;K;;  
IAFIC,2C;MAAA,0C;QAAA,yB;OAAA,mC;K;;IAYJ,oD;MAuCI,uC;MAjCI,IAAI,SAAQ,CAAZ,C;QAAuB,MAA  
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C,mCAAwB,UAAxB,EAA+B,SAA/B,EAAqC,SAArC,C;K;wCAExC,Y;MACqC,OAAI,YAAO,CAAX,GjMd6B,Y  
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D;MAAuC,uB;MACxE,sBAA2B,I;MAC3B,iBAAmC,OAAO,CAA1C,GjM/CkE,YiM+CrB,KjM/CsC,KAAjB,EiM  
+CZ,IjM/CyC,KAA7B,CiM+CrB,KAA7C,GjM/CkE,YiM+CF,KjM/CmB,KAAjB,EiM+CO,IjM/CsB,KAA7B,CiM  
+CF,K;MACHe,cjM6LmC,SiM7LhB,IjM6LgB,C;MiM5LnC,cAAuB,cAAJ,GAAa,KAAb,GAAwB,mB;K;gDAE3C  
,Y;MAAkC,qB;K;iDAEIC,Y;MACI,YAAY,W;MACZ,IAAI,6BAAS,mBAAT,QAAJ,C;QACI,IAAI,CAAC,cAAL,  
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;IAMhC,wB;K;kCAII,Y;MAA4B,sB;K;;IAMhC,yB;K;mCAII,Y;MAA4B,uB;K;;Irk7BN,qB;MAEtB,6B;MAFyD,  
gB;K;IAEzD,2B;MAAA,+B;MACI,iBAGoC,a;MAEpC,iBAGoC,c;MAEpC,kBAGmC,C;MAEnC,iBAGkC,E;K;;I  
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GA,yB;M7B2JA,kBAS6D,sB;MAT7D,+B;M6B3JA,wB;QAEsD,OAGC,eAAM,IAAK,KAAK,KAAW,C7B+J7C,e  
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+B;MAAA,wB;QAEuD,sBAAM,IAAK,KAAK,KAAK,KAAM,KAAx,CAAhB,C;O;KAFvD,C;8FAIA,yB;M9B4I  
A,WAS6D,wB;MAT7D,+B;M8B5IA,wB;QAEwD,OASA,eAAM,IAAK,KAAK,UAAY,C9B0I/C,eAAW,oB8BnJm  
B,K9BmJxB,KAAK,CAAL,UAAN,C8B1I+C,MAAZ,CAAhB,C;O;KAXxD,C;8FAGA,yB;M5B0IA,aAS6D,0B;M  
AT7D,+B;M4B1IA,wB;QAEyD,OAMD,eAAM,IAAK,KAAK,UAAY,C5B2I/C,eAAW,oB4BjJoB,K5BiJzB,KAA  
K,CAAL,YAAN,C4B3I+C,MAAZ,CAAhB,C;O;KARxD,C;8FAGA,yB;M7B8IA,kBAS6D,sB;MAT7D,+B;M6B9I  
A,wB;QAEuD,OAGC,eAAM,IAAK,KAAK,UAAY,C7BkJ/C,eAAW,oB6BrJkB,K7BqJvB,KAAK,CAAL,iBAAN,  
C6BIJ+C,MAAZ,CAAhB,C;O;KALxD,C;8FAGA,yB;MAAA,+B;MAAA,wB;QAEwD,sBAAM,IAAK,KAAK,UA  
AM,KAAM,KAAZ,CAAhB,C;O;KAFxD,C;8FAIA,yB;M9B+HA,WAS6D,wB;MAT7D,+B;M8B/HA,wB;QAEwD  
,OASA,eAAM,IAAK,KAAK,UAAY,C9B6H/C,eAAW,oB8BtImB,K9BsIxB,KAAK,CAAL,UAAN,C8B7H+C,MA  
AZ,CAAhB,C;O;KAXxD,C;8FAGA,yB;M5B6HA,aAS6D,0B;MAT7D,+B;M4B7HA,wB;QAEyD,OAMD,eAAM,I  
AAK,KAAK,UAAY,C5B8H/C,eAAW,oB4BpIoB,K5BoIzB,KAAK,CAAL,YAAN,C4B9H+C,MAAZ,CAAhB,C;  
O;KARxD,C;8FAGA,yB;M7BiIA,kBAS6D,sB;MAT7D,+B;M6BjIA,wB;QAEuD,OAGC,eAAM,IAAK,KAAK,U  
AAY,C7BqI/C,eAAW,oB6BxIkB,K7BwIvB,KAAK,CAAL,iBAAN,C6BrI+C,MAAZ,CAAhB,C;O;KALxD,C;8FA  
GA,yB;MAAA,+B;MAAA,wB;QAEwD,sBAAM,IAAK,KAAK,UAAM,KAAM,KAAZ,CAAhB,C;O;KAFxD,C;0F  
AIA,yB;M9BkHA,WAS6D,wB;MAT7D,+B;M8BzGA,8C;MATA,wB;QAEsD,OASA,YAAY,IAAZ,E9BgHjB,eA  
AW,oB8BzHe,K9ByHpB,KAAK,CAAL,UAAN,C8BhHiB,C;O;KAXtD,C;0FAGA,yB;M5BgHA,aAS6D,0B;MAT  
7D,+B;M4B1GA,8C;MANA,wB;QAEuD,OAMD,YAAY,IAAZ,E5BiHjB,eAAW,oB4BvHgB,K5BuHrB,KAAK,C  
AAL,YAAN,C4BjHiB,C;O;KARtD,C;0FAGA,yB;M7BoHA,kBAS6D,sB;MAT7D,+B;M6BjHA,8C;MAHA,wB;Q  
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,C;0FAGA,yB;MAAA,8C;MAAA,wB;QAEsD,mBAAy,IAAZ,EAakB,KAAIB,C;O;KAFtD,C;0FAIA,yB;M9BqG  
A,WAS6D,wB;MAT7D,+B;M8B5FA,oD;MATA,wB;QAEsD,OASA,eAAe,IAAf,E9BmGjB,eAAW,oB8B5Ge,K9  
B4GpB,KAAK,CAAL,UAAN,C8BnGiB,C;O;KAXtD,C;0FAGA,yB;M5BmGA,aAS6D,0B;MAT7D,+B;M4B7FA,  
oD;MANA,wB;QAEuD,OAMD,eAAe,IAAf,E5BoGjB,eAAW,oB4B1GgB,K5B0GrB,KAAK,CAAL,YAAN,C4Bp  
GiB,C;O;KARtD,C;0FAGA,yB;M7BuGA,kBAS6D,sB;MAT7D,+B;M6BpGA,oD;MAHA,wB;QAEqD,OAGC,eA  
Ae,IAAf,E7B2GjB,eAAW,oB6B9Gc,K7B8GnB,KAAK,CAAL,iBAAN,C6B3GiB,C;O;KALtD,C;0FAGA,yB;MA  
AA,oD;MAAA,wB;QAEsD,sBAae,IAAf,EAAqB,KAArB,C;O;KAFtD,C;0EAIA,yB;MAAA,+B;MAAA,mB;QAE  
0C,sBAAM,SAAK,MAAX,C;O;KAF1C,C;0EAGA,yB;MAAA,+B;MAAA,mB;QAE0C,sBAAM,SAAK,MAAX,C;  
O;KAF1C,C;kGAIA,yB;MAAA,gD;MAAA,wB;QAE+D,2BAAW,IAAX,EAAiB,KAAjB,C;O;KAF/D,C;0FAIA,y  
B;MAAA,+B;MAAA,2B;QAEoD,sBAAM,oBAAS,QAAT,CAAN,C;O;KAFpD,C;0FAGA,yB;MAAA,+B;MAAA,  
2B;QAEoD,sBAAM,6BAAU,QAAY,CAAN,C;O;KAFpD,C;0FAGA,yB;MAAA,+B;MAAA,wB;QAEmD,sBAAM  
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A,yB;MAAA,+B;MAAA,4B;QAW2C,sBAAW,oBAAL,SAAK,CAAX,C;O;KAX3C,C;0EAYA,yB;MAAA,+B;M  
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;MAAQ,OAAA,YAAQ,O;K;oCAE9C,Y;MACyD,+BAAS,YAAT,C;K;IAEnC,oC;MAAiC,wB;MAAhC,oB;MACn  
B,eAAoB,C;K;4CACpB,Y;MAAyB,sBAAQ,YAAM,O;K;8CACvC,Y;MAAyD,Q;MAA9B,IAAI,eAAQ,YAAM,O  
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B,2B;UY/7C6B,2BZ+7CR,OY/7CQ,Q;UAAA,W;YAAuB,oBAAR,YAAQ,EZ+7C/B,OazyCF,KDtJiC,C;WZ+7C9  
C,IAAI,OAAJ,C;YAAyB,aAAO,K;YAAP,e;+;QAC/C,aAAO,I;+;MYh8CH,iB;K;mCAGJ,Y;MAAkC,OAAA,IAAK,  
QAAQ,OAAb,KAAqB,C;K;+;IA7CvD,sC;MAAA,oD;MACgC,uBAAK,iBAAU,IAAV,CAAL,C;MADhC,Y;K;+;+oC  
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,0CALrB,G;K;gFAuDA,yB;MAAA,yC;MAWSc,yC;QAAA,wB;UAAW,OAAA,aAAK,KAAL,CCqIV,K;S;O;MDh  
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EY,UAAwB,M;MADhC,8CAAwB,kBAAa,KAAM,UAAAnB,KACHB,2CAAS,KAAM,MAAf,cAAwB,6CAAQ,KA  
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C0D,gCAAS,YAAT,C;K;IAEpC,qC;MAAkC,yB;MAAjC,oB;MACnB,eAAoB,C;K;6CACpB,Y;MAAyB,sBAAQ,  
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BAAN,EAAM,2BAAN,O7BuOf,C;;Q6BvO8C,MAAM,2BAAuB,YAAM,WAA7B,C;K;;2CAG7F,mB;MAGS,Q;  
MAAL,IAAI,eAAC,0EAAD,SAAJ,C;QAakC,OAAO,K;MAEzC,OAAe,WAAR,YAAQ,EAAS,O7B8HS,K6B9HI  
B,C;K;gDAGnB,oB;MACY,Q;MAA2B,gBAA3B,gE;MAA2B,c;;Qd+7CvB,U;QADhB,IAAI,wCAAsB,mBAA1B,  
C;UAAqC,aAAO,I;UAAP,e;SACrB,6B;QAAhB,OAAGB,gBAAhB,C;UAAgB,2B;Uc/7C6B,2Bd+7CR,Oc/7CQ,S;  
UAAA,W;YAAwB,oBAAR,YAAQ,Ed+7ChC,Ofr0CA,K6B1HgC,C;Wd+7C/C,IAAI,OAAJ,C;YAAyB,aAAO,K;Y  
AAP,e;;QAC/C,aAAO,I;;Mch8CH,iB;K;oCAGJ,Y;MAAkC,OAAA,IAAK,QAAQ,OAAb,KAAqB,C;K;;IA7CvD,u  
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B, SAAIB, C; K; IAErD, oC; MAO6C, Q; MAAA, yCAAa, KAAb, oBAAuB, kBAaKb, SAAIB, C; K; IAEpE, 8B; MAMqC, Q; MAAA, 0DAAmB, kBAaKb, SAAIB, C; K; IAExD, qC; MAO+C, Q; MAAA, 0CAAc, KAAAd, oBAAwB, kBAaKb, SA AIB, C; K; IAMvE, kC; MAM4C, kCAAsB, EAAtB, C; K; IAE5C, 2C; MASmB, Q; MAAA, sBAAL, SAAK, EAAa, KAAb, C; MAAL, iB; QAA4B, OAAO, I; OAA7C, UAAU, I; MACV, IvMhFkE, YuMgF9D, GvMhF+E, KAAjB, EAA6B, CDkK5 D, SwMIFzB, 6BAAM, UxMkF6B, KAAL, GAAiB, GAAtB, CCIK4D, MAA7B, CuMgF9D, IAAJ, C; QAA2B, OAAO, I; MACIC, OxMkJqC, UAAW, OwMIJzC, GvM4E8B, KdsEW, CAAX, C; K; IwM/IzC, mC; MAM8C, mCAAuB, EAAvB, C; K; IAE9C, 4C; MASmB, Q; MAAA, sBAAL, SAAK, EAAa, KAAb, C; MAAL, iB; QAA4B, OAAO, I; OAA7C, UAAU, I; MACV, IvMtGkE, YuMsG9D, GvMtG+E, KAAjB, EAA6B, CCmK5D, SsM7DzB, 8BAAO, UtM6D4B, KAAL, GAAiB, KAAtB, CDnK4D, MAA7B, CuMsG9D, IAAJ, C; QAA4B, OAAO, I; MACnC, OtM6HuC, WAAy, QsM7H5C, GvMgEg C, KC6DY, CAAZ, C; K; IsM1H3C, iC; MAM0C, iCAAqB, EAAtB, C; K; IAE1C, 0C; MASI, WAAW, KAAX, C; MAEA, a AAa, SAAK, O; MACIB, IAAI, WAAU, CAAd, C; QAAiB, OAAO, I; MAExB, YAAkB, 4BAAK, U; MACvB, S; MAEA, g BAAgB, qBAaK, CAAL, C; MACHb, IAAI, YAAy, EAAhB, C; QACI, IAAI, WAAU, CAAV, IAaE, cAAa, EAaHc, C; U AAqC, OAAO, I; QAC5C, QAAQ, C; ; QAER, QAAQ, C; ; MAGZ, uBAAuB, mB; MAEvB, qBAAqB, gB; MACrB, avM+F mC, SuM/FtB, KvM+Fsb, C; MuM9FnC, aAAa, W; MACb, aAAU, KAAV, MAAsB, MAAtB, M; QACI, YAAy, QAAQ, q BAAK, CAAL, CAAR, EAAiB, KAAjB, C; QAEZ, IAAI, QAAQ, CAAZ, C; UAAe, OAAO, I; QACtB, IvMpJ8D, YuMoJ1 D, MvMpJ2E, KAAjB, EuMoJjD, cvMpJ8E, KAA7B, CuMoJ1D, IAAJ, C; UACI, IAAI, +CAaKb, gBAAIB, QAAJ, C; YA Cl, iBvM7FwC, WuM6FvB, KvM7FuB, EuM6Ff, MvM7Fe, C; YuM+FxC, IvMxJsD, YuMwJID, MvMxJmE, KAAjB, Eu MwJzC, cvMxJsE, KAA7B, CuMwJID, IAAJ, C; cACI, OAAO, I; ; YAGX, OAAO, I; ; SAIf, SvMpHkD, SAAe, YuMoHjE, MvMpH4D, KAAK, EuMoHvD, MvMpHmE, KAAZ, CAaf, C; QuMsHID, mBAAmB, M; QACnB, SvMjJiD, SuMiJjD, MvMjJ2D, KAAK, GAAW, CA2N5C, SuM1ErB, KvM0EqB, CA3N4C, MAAX, IAaf, C; QuMkJjD, IvMpK8D, YuMoK 1D, MvMpK2E, KAAjB, EuMoKjD, YvMpK8E, KAA7B, CuMoK1D, IAAJ, C; UAA2B, OAAO, I; ; MAGtC, OAAO, M; K ; IAGX, kC; MAM4C, kCAAsB, EAAtB, C; K; IAE5C, 2C; MASI, WAAW, KAAX, C; MAEA, aAAa, SAAK, O; MACIB, IA AI, WAAU, CAAd, C; QAAiB, OAAO, I; MAExB, YAAmB, 6BAAM, U; MACzB, S; MAEA, gBAAgB, qBAaK, CAAL, C ; MACHb, IAAI, YAAy, EAAhB, C; QACI, IAAI, WAAU, CAAV, IAaE, cAAa, EAaHc, C; UAAqC, OAAO, I; QAC5C, Q AAQ, C; ; QAER, QAAQ, C; ; MAIZ, uBAAuB, gD; MAEvB, qBAAqB, gB; MACrB, a1KkCqC, UAAW, oB0KICnC, K1Kk CmC, CAAX, C; M0KjCrC, aAAa, 2B; MACb, aAAU, KAAV, MAAsB, MAAtB, M; QACI, YAAy, QAAQ, qBAaK, CAA L, CAAR, EAAiB, KAAjB, C; QAEZ, IAAI, QAAQ, CAAZ, C; UAAe, OAAO, I; QACtB, I1K7M+D, a0K6M3D, M1K7M6 E, KAAIB, E0K6MID, c1K7MgF, KAA9B, C0K6M3D, IAAJ, C; UACI, IAAI, +CAaKb, gBAAIB, QAAJ, C; YACI, iB1K 3J0C, Y0K2JzB, K1K3JyB, E0K2JjB, M1K3JiB, C; Y0K6J1C, I1KjNuD, a0KiNnD, M1KjNqE, KAAIB, E0KiN1C, c1Kj NwE, KAA9B, C0KiNnD, IAAJ, C; cACI, OAAO, I; ; YAGX, OAAO, I; ; SAIf, S1KILoD, U0KkLpD, M1KIL+D, KAAK, U 0KkL1D, M1KILsE, KAAZ, CAAhB, C; Q0KoLpD, mBAAmB, M; QACnB, S1K/MmD, U0K+MnD, M1K/M8D, KAAK ,KAAW, C7B+J7C, UAAW, oBAAL, CAyDR, SuMTrB, KvMSqB, CAzDQ, MAAK, CAAL, iBAAN, C6B/J6C, MAAX, CAAhB, C; Q0KgNnD, I1K7N+D, a0K6N3D, M1K7N6E, KAAIB, E0K6NID, Y1K7NgF, KAA9B, C0K6N3D, IAAJ, C; UAA2B, OAAO, I; ; MAGtC, OAAO, M; K; IhM7RX, 6B; MACkD, OAAuB, 0BAAtB, KAAO, WAAe, EAAU, KAAO, W AAjB, C; K; IACzE, 8B; MACqD, OAAC, gCAAuB, iBAAU, gCAAV, C; K; IAE7E, 4B; MACoD, OPwSZ, SAvgI, oBOjM S, EPiMd, KAAK, CAAL, iBOjMc, KPiMT, oBOjMuB, EPiM5B, KAAK, CAAL, iBOjMc, CPwSH, QAAV, C; K; IOvSxC, +B; MACuD, OPsSf, SAvgI, oBO/LY, EP+LjB, KAAK, CAAL, iBO/LiB, QP+LZ, oBO/L0B, EP+L/B, KAAK, CAAL, iB O/LiB, CPsSn, QAAV, C; K; IOjSxC, 6B; MAEI, eAAe, EsByLoB, K; MtBxLnC, cAAc, EsBwLqB, K; MtBvLnC, IAAI, qB AAU, CAAd, C; QACI, OsB2C+D, atB3CpD, EsB2CsE, KAAIB, EtB3C/C, EsB2C6E, KAA9B, CtB3CpD, IAAJ, GAAa, a AAb, GAA2B, a; OAIc, IAAI, uBAAy, CAAhB, C; QACI, OAAO, UAAM, aAAW, OAAX, CAAN, C; OAIx, eAAiB, 4B AAac, CAAd, CAAD, KAAoB, OAApB, CAAD, WAAkC, CAaIC, C; MACf, UAAU, kBAAW, kBAAW, OAAX, CAAX, C; MACV, OAAO, UAAM, iCsBgCsD, aAaKb, CtBhCzD, UAAM, GAAN, CsBgCyD, MAaIB, EAA8B, CtBhCvD, UA AM, OAAAN, CsBgCuD, MAA9B, CtBhCvC, KAAJ, GAAkC, CAaIC, GAAyC, CAAPd, EAAN, C; K; IAIX, gC; MAKe, Q ; MAHX, eAAe, EsBqKoB, K; MtBpKnC, cAAc, EsBoKqB, K; MtBnKnC, IAAI, qBAAU, CAAd, C; QACW, IsBuBwD, at BvBpD, EsBuBsE, KAAIB, EtBvB/C, EsBuB6E, KAA9B, CtBvBpD, IAAJ, C; UACH, S; ; UAEA, OsB8CgD, UtB9ChD, E sB8C2D, KAAK, UtB9C3D, EsB8CuE, KAAZ, CAAhB, C; ; QtBjDpD, W; OAQJ, IAAI, uBAAy, CAAhB, C; QACI, OAA O, UAAM, gBAAW, OAAX, CAAN, C; OAIx, eAAiB, 4BAAc, CAAd, CAAD, KAAoB, OAApB, CAAD, WAAkC, CAaI C, C; MACf, UAAU, kBAAW, kBAAW, OAAX, CAAX, C; MACV, OAAO, UAAM, asBQsD, aAaKb, CtBR9D, UAAM,



B;MAEQ,sBAAW,SAAX,C;QACI,gBAAS,SAAK,SAAL,C;WAEb,sBAAW,mBAAX,C;QACI,gBAAS,O;QACT,e  
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AAf,C;QACI,gBAAS,mB;OAEb,aAAa,IAAK,S;MAEd,eAAW,OAAX,C;QACI,0B;WAEJ,gC;QACI,MAAM,MA  
AO,U;;QAGb,a;;MARR,W;K;;IA5CJ,gD;MAAA,0D;MACyD,6BAAK,QAAL,EAAe,SAAf,C;MADzD,Y;K;mKEx  
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U3D,oC;MAAA,wC;K;;IAAA,gD;MAAA,+C;QAAA,8B;OAAA,wC;K;;MC/BI,yC;;IAAA,uC;MAAA,2C;K;;IA  
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,OAI6B,oBAAgB,OAAhB,EAAYB,OAAzB,C;;UACrB,WAAW,OAAQ,kBAAS,yCAAT,C;UAL3B,OAMY,SAAS,  
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K,IAAL,EA AW,4BAAX,C;K;;qDA6BZ,e;MAE0B,Q;MAAtB,OAAI,IAAK,IAAL,KAAa,GAAjB,GAAsB,wEAAt  
B,GAAqC,I;K;sDAEzC,8B;MACI,iBAAU,OAAV,EAAMB,IAAnB,C;K;0DAEJ,e;MACI,OAAI,IAAK,IAAL,KAA  
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SI,eAAe,6B;MACf,oBAAkC,yBAAd,aAAc,EAAoC,QAApC,EAA2D,QAA3D,C;MACIC,OAAO,Q;K;IAciC,2B;K  
;iDAaxC,kC;MAIL,IAAI,uCAA0B,QAAS,UAAvC,C;QAAkD,M;MACID,OAAO,sBAAS,QAAS,WAAIB,e;K;iDA  
GX,kC;MAKqD,6BAAS,QAAS,WAAIB,e;K;;;IA YzD,mC;MAA2C,0B;MACvC,eAAoB,C;MACpB,mBAA4B,  
I;MAC5B,sBAAyC,I;MACzC,gBAAoC,I;K;gDAEPc,Y;MACI,OAAO,IAAP,C;QACI,QAAM,YAAN,C;eACI,C;Y  
AAA,K;eACA,C;YACI,IAAI,kCAAe,UAA nB,C;cACI,eAAQ,C;cACR,OAAO,I;;cAEP,sBAAe,I;;YALvB,K;eAO

A,C;YAAc,OAAO,K:eACrB,C;eAAA,C;YAAgC,OAAO,I;kBAC/B,MAAM,yB;;QAGIB,eAAQ,C;QACR,WAAW,4B;QACX,gBAAW,I;QACX,IAAK,cAAO,IAAP,C;;K;6CAIb,Y;MACU,IASe,I;MATrB,QAAM,YAAN,C;aACI,C;aAAA,C;UAAaC,OAAO,qB;aAC7C,C;UACI,eAAQ,C;UACR,OAAO,kCAAe,O;aAE1B,C;UACI,eAAQ,C;UACR,aACa,iF;UACb,mBAAy,I;UACZ,OAAO,M;gBAEH,MAAM,yB;;K;uDAItB,Y;MACI,IAAI,CAAC,cAAL,C;QAAgB,MAAM,6B;;QAA8B,OAAO,W;K;2DAG/D,Y;MAA4C,QAAM,YAAN,C;aACxC,C;UADwC,OAC1B,6B;aACd,C;UAFwC,OAExB,2BAAsB,sBAAtB,C;gBAFwB,OAGhC,2BAAsB,uCAAoC,YAA1D,C;;K;IAOWB,4E;MAAA,oB;QAC5B,wCAAW,C;QAAX,OACA,mB;O;K;oDALR,+B;MACI,mBAAy,K;MACZ,eAAQ,C;MACR,ODpHkC,kCCoHF,0CDpHE,CAAtC,c;K;IC8HoC,+E;MAAA,oB;QAC5B,wCAAW,C;QAAX,OACA,mB;O;K;yDANR,kC;MACI,IAAI,CAAC,QAAS,UAAa,C;QAAYB,M;MACzB,sBAAe,Q;MACf,eAAQ,C;MACR,OD9HkC,kCC8HF,6CD9HE,CAAtC,c;K;qDcoIA,iB;MAEI,eAAQ,C;K;oEAGZ,qB;MACI,MAAM,S;K;8EAIN,Y;MAAQ,0C;K;;ID9I0B,0D;MAAA,uB;QAAU,qBAAM,IAAK,OAAX,C;O;K;IARBPd,uD;MAqBI,OAAsC,wCAAtC,c;K;8GArBJ,yB;MAqB0C,wD;QAAA,uB;UAAU,qBAAM,IAAK,OAAX,C;S;O;MArBPd,sC;QAqBI,mBAAaC,sCAAtC,6B;QAAA,yD;O;KArBJ,C;IAuBA,oE;MAUI,MAAM,wBAAoB,sEAApB,C;K;2HAVV,yB;MAAA,gE;MAAA,sC;QAUI,MAAM,6BAAoB,sEAApB,C;O;KAVV,C;mHAYA,yB;MAAA,gE;MAAA,4B;QAMI,MAAM,6BAAoB,4CAApB,C;O;KANV,C;;;;gBPR8B,S;cACf,S;0BEGiB,sC;qBMsCH,C;yBACI,C;sBACH,C;kBACJ,C;iBACD,C;mBACE,C;;;C!O3EvC,E;" }

Found in path(s):

\* /opt/cola/permits/1175636870\_1624449445.69/0/kotlin-1-3-70-tgz/package/kotlin.js.map

# 1.203 listenablefuture 9999.0-empty-to-avoid-conflict-with-guava

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## 1.204 dropwizard-request-logging 2.0.28

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## 1.205 netty-resolver-dns-native-macos

### 4.1.93.Final

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```

Found in path(s):

```
* /opt/cola/permits/1743695117_1689340444.9948363/0/netty-resolver-dns-native-macos-4-1-93-final-jar/META-INF/maven/io.netty/netty-resolver-dns-native-macos/pom.xml
```

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```
Manifest-Version: 1.0
Implementation-Title: Netty/Resolver/DNS/Native/MacOS
Bundle-Description: Netty is an asynchronous event-driven network application framework for rapid development of maintainable high performance protocol servers and clients.
Automatic-Module-Name: io.netty.resolver.dns.macos.osx.aarch_64
Bundle-License: https://www.apache.org/licenses/LICENSE-2.0
Bundle-SymbolicName: io.netty.resolver-dns-native-macos
Implementation-Version: 4.1.93.Final
Built-By: norman
Bnd-LastModified: 1684999969345
Bundle-ManifestVersion: 2
Implementation-Vendor-Id: io.netty
Bundle-DocURL: https://netty.io/
Bundle-Vendor: The Netty Project
Import-Package: sun.nio.ch;resolution:=optional,org.eclipse.jetty.npn;version="[1,2)";resolution:=optional,org.eclipse.jetty.alpn;version="[1,2)";resolution:=optional
Tool: Bnd-6.3.1.202206071316
Implementation-Vendor: The Netty Project
Bundle-Name: Netty/Resolver/DNS/Native/MacOS
Bundle-Version: 4.1.93.Final
Build-Jdk-Spec: 1.8
Created-By: Apache Maven Bundle Plugin 5.1.8
```

Build-Jdk: 1.8.0\_252

Implementation-URL: <https://netty.io/netty-resolver-dns-native-macos/>

Found in path(s):

\* /opt/cola/permits/1743695117\_1689340444.9948363/0/netty-resolver-dns-native-macos-4-1-93-final-jar/META-INF/MANIFEST.MF

# 1.206 commons-lang3 2.6

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## 1.209 bouncycastle 1.72

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```
public DomainParameters(BigInteger p, BigInteger g, BigInteger q, BigInteger j,
```

Found in path(s):

```
* /opt/cola/permits/1487838996_1674089109.076011/0/src-116-  
zip/org/bouncycastle/asn1/x9/DomainParameters.java
```

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```
/**
```

```
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```

```
*
```

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```

```
*/
```

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```
* /opt/cola/permits/1487838996_1674089109.076011/0/src-116-  
zip/org/bouncycastle/pqc/legacy/math/ntru/euclid/test/IntEuclideanTest.java
```

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```
/**
```

```
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```

```
*
```

```
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```

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// now keep space is free to use

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zip/org/bouncycastle/pqc/legacy/crypto/gmss/GMSSPrivateKeyParameters.java  
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/\*\*

\* Magic value for proprietary OpenSSH private key.

\*\*/

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\* Poly1305 message authentication code, designed by D. J. Bernstein.

\* <p>

\* Poly1305 computes a 128-bit (16 bytes) authenticator, using a 128 bit nonce and a 256 bit key

\* consisting of a 128 bit key applied to an underlying cipher, and a 128 bit key (with 106

\* effective key bits) used in the authenticator.  
\* <p>  
\* The polynomial calculation in this implementation is adapted from the public domain <a  
\* href="https://github.com/floodyberry/poly1305-donna">poly1305-donna-unrolled</a> C implementation  
\* by Andrew M (@floodyberry).  
\* @see Poly1305KeyGenerator  
\*/

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\* Contains the polynomial classes used in the NTRU round 3 algorithm.

\*

\* <p>

\* This implementation is based on the C reference implementation submitted for the round 3 NIST PQC competition,

\* released under CC0-1.0 license.

\* </p>

\*

\* <p><a href="https://csrc.nist.gov/CSRC/media/Projects/post-quantum-cryptography/documents/round-3/submissions/NTRU-Round3.zip">NIST submission files</a></p>

\* <p><a href="https://github.com/jschanck/ntru/blob/master/LICENSE">License of reference implementation</a></p>

\*/

Found in path(s):

\* /opt/cola/permits/1487838996\_1674089109.076011/0/src-116-zip/org/bouncycastle/pqc/math/ntru/package-info.java

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\* SPHINCS-256 signer.

\* <p>

\* This implementation is heavily based on the reference implementation in SUPERCOP, the main difference being the digests used

\* for message hashing and tree construction are now configurable (within limits...) and that the implementation produces

\* detached signatures.

\* </p>

\* <p>

\* The SPHINCS reference implementation is public domain, as per the statement in the second last paragraph of

\* section 1 in <https://eprint.iacr.org/2014/795.pdf>

\* </p>

\*/

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zip/org/bouncycastle/pqc/crypto/sphincs/SPHINCS256Signer.java  
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\* The NTRU algorithm based on the round 3 submission of the NIST post-quantum cryptography. For the old  
NTRU, see

\* { @link org.bouncycastle.pqc.legacy.crypto.ntru }.

\*

\* <p>

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\* </p>

\*

\* <p><a href="https://csrc.nist.gov/CSRC/media/Projects/post-quantum-cryptography/documents/round-  
3/submissions/NTRU-Round3.zip">NIST submission files</a></p>

\* <p><a href="https://github.com/jschanck/ntru/blob/master/LICENSE">License of reference  
implementation</a></p>

\*

\* @see <a href="https://csrc.nist.gov/Projects/post-quantum-cryptography/round-3-submissions">NIST round 3  
PQC submissions page</a>

\* @see <a href="https://ntru.org/">NTRU website</a>

\* @see <a href="https://ntru.org/f/ntru-20190330.pdf">NTRU specification</a>

\*/

Found in path(s):

\* /opt/cola/permits/1487838996\_1674089109.076011/0/src-116-zip/org/bouncycastle/pqc/crypto/ntru/package-  
info.java

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\* /opt/cola/permits/1698848079\_1685285737.3106787/0/netty-transport-udt-4-1-93-final-sources-jar/io/netty/channel/udt/package-info.java  
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\* /opt/cola/permits/1698848079\_1685285737.3106787/0/netty-transport-udt-4-1-93-final-sources-jar/io/netty/channel/udt/UdtChannelConfig.java  
\* /opt/cola/permits/1698848079\_1685285737.3106787/0/netty-transport-udt-4-1-93-final-sources-jar/io/netty/channel/udt/DefaultUdtChannelConfig.java

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\* /opt/cola/permits/1698848079\_1685285737.3106787/0/netty-transport-udt-4-1-93-final-sources-jar/io/netty/channel/udt/UdtChannelOption.java  
\* /opt/cola/permits/1698848079\_1685285737.3106787/0/netty-transport-udt-4-1-93-final-sources-jar/io/netty/channel/udt/DefaultUdtServerChannelConfig.java

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- \* /opt/cola/permits/1698848079\_1685285737.3106787/0/netty-transport-udt-4-1-93-final-sources-jar/io/netty/channel/udt/nio/NioUdtMessageAcceptorChannel.java
- \* /opt/cola/permits/1698848079\_1685285737.3106787/0/netty-transport-udt-4-1-93-final-sources-jar/io/netty/channel/udt/nio/NioUdtProvider.java
- \* /opt/cola/permits/1698848079\_1685285737.3106787/0/netty-transport-udt-4-1-93-final-sources-jar/io/netty/channel/udt/nio/NioUdtMessageRendezvousChannel.java
- \* /opt/cola/permits/1698848079\_1685285737.3106787/0/netty-transport-udt-4-1-93-final-sources-jar/io/netty/channel/udt/nio/NioUdtByteConnectorChannel.java
- \* /opt/cola/permits/1698848079\_1685285737.3106787/0/netty-transport-udt-4-1-93-final-sources-jar/io/netty/channel/udt/nio/NioUdtAcceptorChannel.java
- \* /opt/cola/permits/1698848079\_1685285737.3106787/0/netty-transport-udt-4-1-93-final-sources-jar/io/netty/channel/udt/UdtChannel.java
- \* /opt/cola/permits/1698848079\_1685285737.3106787/0/netty-transport-udt-4-1-93-final-sources-jar/io/netty/channel/udt/nio/NioUdtByteRendezvousChannel.java
- \* /opt/cola/permits/1698848079\_1685285737.3106787/0/netty-transport-udt-4-1-93-final-sources-jar/io/netty/channel/udt/nio/NioUdtMessageConnectorChannel.java

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```
* /opt/cola/permits/1668779570_1683634908.6867876/0/protobuf-java-3-11-4-sources-4-  
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* /opt/cola/permits/1668779570_1683634908.6867876/0/protobuf-java-3-11-4-sources-4-  
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* /opt/cola/permits/1668779570_1683634908.6867876/0/protobuf-java-3-11-4-sources-4-  
jar/com/google/protobuf/FieldInfo.java  
* /opt/cola/permits/1668779570_1683634908.6867876/0/protobuf-java-3-11-4-sources-4-  
jar/com/google/protobuf/MapFieldSchema.java  
* /opt/cola/permits/1668779570_1683634908.6867876/0/protobuf-java-3-11-4-sources-4-  
jar/com/google/protobuf/ByteOutput.java  
* /opt/cola/permits/1668779570_1683634908.6867876/0/protobuf-java-3-11-4-sources-4-  
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# 1.215 commons-exec 1.0.1

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\*

\* <p>The purpose of the CSVParser is to take a single string and parse it into

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\*

\* <p>The CSVParser has grown organically based on user requests and does not truly match

\* any current requirements (though it can be configured to match or come close). There

\* are no plans to change this as it will break existing requirements. Consider using

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\*

\* @author Glen Smith

\* @author Rainer Pruy

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jar/com/opencsv/bean/CsvBindByPosition.java
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jar/com/opencsv/bean/ConverterDate.java
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jar/com/opencsv/bean/CsvToBeanBuilder.java
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jar/com/opencsv/bean/util/OpencsvUtils.java
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jar/com/opencsv/exceptions/CsvException.java
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jar/com/opencsv/bean/ConverterPrimitiveTypes.java
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jar/com/opencsv/exceptions/CsvMultilineLimitBrokenException.java  
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jar/com/opencsv/bean/customconverter/ConvertGermanToBoolean.java  
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info.java  
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jar/com/opencsv/exceptions/package-info.java  
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jar/com/opencsv/exceptions/CsvBeanIntrospectionException.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-  
jar/com/opencsv/bean/CsvCustomBindByPosition.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-  
jar/com/opencsv/bean/StatefulBeanToCsv.java

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\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-  
jar/com/opencsv/bean/concurrent/package-info.java

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Found in path(s):

\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-  
jar/com/opencsv/CSVParserWriter.java

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Found in path(s):

\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/ResultSetColumnNameHelperService.java

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\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/HeaderColumnNameTranslateMappingStrategy.java

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\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/convertLanguageToBoolean.properties

\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/opencsv\_pt\_BR.properties

\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/opencsv.properties

\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/convertLanguageToBoolean\_en.properties

\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/opencsv\_en.properties

\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/convertLanguageToBoolean\_de.properties

\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/opencsv\_de.properties

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\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/concurrent/ProcessCsvBean.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/CsvConverter.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/util/OrderedObject.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/CsvBindAndSplitByPosition.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/BeanFieldSingleValue.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/BeanFieldSplit.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/CsvBindAndJoinByPosition.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/concurrent/ProcessCsvLine.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/CsvBindAndSplitByName.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/concurrent/IntolerantThreadPoolExecutor.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/concurrent/AccumulateCsvResults.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/FieldMapByNameEntry.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/AbstractCsvConverter.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/FieldMapByName.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/BeanFieldJoin.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/CsvBindAndJoinByName.java

# 1.217 proto-google-common-protos 2.9.0

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```

Found in path(s):

```
* /opt/cola/permits/1572890195_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-  
jar/google/api/launch_stage.proto
```

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```
* /opt/cola/permits/1572890195_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-  
jar/google/api/usage.proto  
* /opt/cola/permits/1572890195_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-  
jar/google/api/endpoint.proto  
* /opt/cola/permits/1572890195_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-  
jar/google/api/service.proto  
* /opt/cola/permits/1572890195_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-  
jar/google/api/consumer.proto  
* /opt/cola/permits/1572890195_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-  
jar/google/api/distribution.proto  
* /opt/cola/permits/1572890195_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-  
jar/google/api/error_reason.proto  
* /opt/cola/permits/1572890195_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-  
jar/google/api/context.proto  
* /opt/cola/permits/1572890195_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-  
jar/google/type/date.proto  
* /opt/cola/permits/1572890195_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-  
jar/google/api/quota.proto  
* /opt/cola/permits/1572890195_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-  
jar/google/api/field_behavior.proto  
* /opt/cola/permits/1572890195_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-  
jar/google/api/httpbody.proto
```

\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/routing.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/system\_parameter.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/type/datetime.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/type/color.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/billing.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/logging/type/log\_severity.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/type/decimal.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/config\_change.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/type/latlng.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/metric.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/control.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/type/money.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/type/month.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/logging.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/client.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/log.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/type/timeofday.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/geo/type/viewport.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/rpc/status.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/type/fraction.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/documentation.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/type/interval.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/type/postal\_address.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/logging/type/http\_request.proto

\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/type/dayofweek.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/source\_info.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/label.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/type/quaternion.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/rpc/error\_details.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/backend.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/type/expr.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/annotations.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/longrunning/operations.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/rpc/code.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/type/calendar\_period.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/type/phone\_number.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/resource.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/http.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/cloud/extended\_operations.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/rpc/context/attribute\_context.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/monitored\_resource.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/auth.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/visibility.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/api/monitoring.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/type/localized\_text.proto  
\* /opt/cola/permits/1572890195\_1677106955.5681205/0/proto-google-common-protos-2-9-0-1-jar/google/cloud/audit/audit\_log.proto

# 1.218 hamcrest 1.3

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\* /opt/cola/permits/1548380653\_1675143991.351548/0/metrics-caffeine-4-1-29-sources-1-jar/com/codahale/metrics/caffeine/MetricsStatsCounter.java

# 1.220 commons-io 2.4

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- \* /opt/cola/permits/1698848016\_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-jar/io/netty/handler/codec/memcache/binary/BinaryMemcacheResponseDecoder.java
- \* /opt/cola/permits/1698848016\_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-jar/io/netty/handler/codec/memcache/binary/BinaryMemcacheMessage.java
- \* /opt/cola/permits/1698848016\_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-jar/io/netty/handler/codec/memcache/binary/FullBinaryMemcacheRequest.java
- \* /opt/cola/permits/1698848016\_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-jar/io/netty/handler/codec/memcache/binary/BinaryMemcacheResponseEncoder.java
- \* /opt/cola/permits/1698848016\_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-jar/io/netty/handler/codec/memcache/binary/BinaryMemcacheObjectAggregator.java
- \* /opt/cola/permits/1698848016\_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-jar/io/netty/handler/codec/memcache/binary/BinaryMemcacheRequestDecoder.java
- \* /opt/cola/permits/1698848016\_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-jar/io/netty/handler/codec/memcache/binary/BinaryMemcacheRequest.java
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- \* /opt/cola/permits/1698848016\_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-jar/io/netty/handler/codec/memcache/binary/DefaultFullBinaryMemcacheRequest.java
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- \* /opt/cola/permits/1698848016\_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-jar/io/netty/handler/codec/memcache/binary/AbstractBinaryMemcacheDecoder.java
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- \* /opt/cola/permits/1698848016\_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-jar/io/netty/handler/codec/memcache/AbstractMemcacheObject.java
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- \* /opt/cola/permits/1698848016\_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-jar/io/netty/handler/codec/memcache/binary/package-info.java
- \* /opt/cola/permits/1698848016\_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-jar/io/netty/handler/codec/memcache/binary/AbstractBinaryMemcacheMessage.java
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- \* /opt/cola/permits/1698848016\_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-jar/io/netty/handler/codec/memcache/binary/BinaryMemcacheOpcodes.java
- \* /opt/cola/permits/1698848016\_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-jar/io/netty/handler/codec/memcache/AbstractMemcacheObjectDecoder.java
- \* /opt/cola/permits/1698848016\_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-

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* /opt/cola/permits/1698848016_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-
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* /opt/cola/permits/1698848016_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-
jar/io/netty/handler/codec/memcache/AbstractMemcacheObjectAggregator.java
* /opt/cola/permits/1698848016_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-
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* /opt/cola/permits/1698848016_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-
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* /opt/cola/permits/1698848016_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-
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* /opt/cola/permits/1698848016_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-
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* /opt/cola/permits/1698848016_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-
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* /opt/cola/permits/1698848016_1685285748.07515/0/netty-codec-memcache-4-1-93-final-sources-jar/META-
INF/maven/io.netty/netty-codec-memcache/pom.xml
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## 1.222 dropwizard-configuration 2.0.28

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# 1.223 error\_prone\_annotations 2.18.0

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\* /opt/cola/permits/1613098386\_1679654443.4759493/0/auto-service-1-0-rc6-sources-1-jar/com/google/auto/service/processor/ServicesFiles.java

## 1.225 hibernate-validator 6.1.7.Final

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<li>Type mapping behavior may be customized by providing a { @link com.sun.jna.TypeMapper} for the { @link com.sun.jna.Library#OPTION\_TYPE\_MAPPER} option when initializing a library interface. See { @link com.sun.jna.win32.W32APITypeMapper} for an example which provides custom conversion of boolean and String types. You are free to use whatever types are convenient in your defined interfaces, but all custom types <em>must</em> provide a mapping to one of the basic or derived types listed above.

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- \* /opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/ptr/package.html
- \* /opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/internal/package.html
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- \* /opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/DefaultTypeMapper.java
- \* /opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/StructureWriteContext.java
- \* /opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/FromNativeConverter.java
- \* /opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/NativeMapped.java
- \* /opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/IntegerType.java
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- \* /opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/FunctionParameterContext.java
- \* /opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/MethodParameterContext.java
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## 1.232 jackson-annotations 2.15.0

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Jackson is a high-performance, Free/Open Source JSON processing library. It was originally written by Tatu Saloranta (tatu.saloranta@iki.fi), and has been in development since 2007.

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\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/tree/ExpressionNode.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/tree/TextNode.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/tree/Node.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/tree/TreeParser.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/interpret/Context.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/filter/AbsFilter.java

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\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-  
jar/com/hubspot/jinjava/lib/filter/EscapeFilter.java

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* /opt/cola/permits/1613098423_1679654368.0746422/0/jinjava-2-6-0-sources-2-
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* /opt/cola/permits/1613098423_1679654368.0746422/0/jinjava-2-6-0-sources-2-
jar/com/hubspot/jinjava/lib/filter/DatetimeFilter.java
* /opt/cola/permits/1613098423_1679654368.0746422/0/jinjava-2-6-0-sources-2-
jar/com/hubspot/jinjava/tree/parse/ExpressionToken.java
* /opt/cola/permits/1613098423_1679654368.0746422/0/jinjava-2-6-0-sources-2-
jar/com/hubspot/jinjava/lib/filter/ReverseFilter.java
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- \* org.eclipse.jetty.orbit:org.eclipse.jdt.core

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- \* org.eclipse.jetty.orbit:javax.security.auth.message

The following artifacts are EPL and CDDL 1.0.

- \* org.eclipse.jetty.orbit:javax.mail.glassfish

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<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

- \* javax.servlet:javax.servlet-api
- \* javax.annotation:javax.annotation-api
- \* javax.transaction:javax.transaction-api
- \* javax.websocket:javax.websocket-api

-----

## Oracle OpenJDK

If ALPN is used to negotiate HTTP/2 connections, then the following artifacts may be included in the distribution or downloaded when ALPN module is selected.

- \* java.sun.security.ssl

These artifacts replace/modify OpenJDK classes. The modifications are hosted at github and both modified and original are under GPL v2 with classpath exceptions.

<http://openjdk.java.net/legal/gplv2+ce.html>

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## OW2

The following artifacts are licensed by the OW2 Foundation according to the terms of <http://asm.ow2.org/license.html>

- org.ow2.asm:asm-commons
- org.ow2.asm:asm

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Apache

The following artifacts are ASL2 licensed.

org.apache.taglibs:taglibs-standard-spec  
org.apache.taglibs:taglibs-standard-impl

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The following artifacts are ASL2 licensed. Based on selected classes from following Apache Tomcat jars, all ASL2 licensed.

org.mortbay.jasper:apache-jsp  
org.apache.tomcat:tomcat-jasper  
org.apache.tomcat:tomcat-juli  
org.apache.tomcat:tomcat-jsp-api  
org.apache.tomcat:tomcat-el-api  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-api  
org.apache.tomcat:tomcat-util-scan  
org.apache.tomcat:tomcat-util

org.mortbay.jasper:apache-el  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-el-api

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org.eclipse.jetty.toolchain:jetty-schemas

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Assorted

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## 1.239 protobuf-java 3.22.3

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* /opt/cola/permits/1657506237_1684232473.9945633/0/protobuf-java-3-22-2-jar/google/protobuf/any.proto  
* /opt/cola/permits/1657506237_1684232473.9945633/0/protobuf-java-3-22-2-jar/google/protobuf/descriptor.proto  
* /opt/cola/permits/1657506237_1684232473.9945633/0/protobuf-java-3-22-2-  
jar/google/protobuf/source_context.proto  
* /opt/cola/permits/1657506237_1684232473.9945633/0/protobuf-java-3-22-2-jar/google/protobuf/struct.proto  
* /opt/cola/permits/1657506237_1684232473.9945633/0/protobuf-java-3-22-2-jar/google/protobuf/field_mask.proto  
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* /opt/cola/permits/1657506237_1684232473.9945633/0/protobuf-java-3-22-2-jar/google/protobuf/wrappers.proto
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## 1.240 jackson-dataformat-yaml 2.14.1

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## xwd v1.0.7

### xwd utility

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Ext headers GL/gltext.h Khronos  
GL/gltext.h Khronos  
GL/wgltext.h Khronos  
KHR/khrplatform.h Khronos

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include/GL/gl.h :

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include/GL/gltext.h  
include/GL/wgltext.h :

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</pre>

# 1.243 libjpeg 9e

## 1.243.1 Available under license :

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```
/*  
* jmorecfg.h  
*
```

\* Copyright (C) 1991-1997, Thomas G. Lane.  
\* Modified 1997-2013 by Guido Vollbeding.  
\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file contains additional configuration options that customize the  
\* JPEG software for special applications or support machine-dependent  
\* optimizations. Most users will not need to touch this file.  
\*/

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\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jmorecfg.h  
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/\*

\* jquant1.c  
\*

\* Copyright (C) 1991-1996, Thomas G. Lane.  
\* Modified 2011-2020 by Guido Vollbeding.  
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\*  
\* This file contains 1-pass color quantization (color mapping) routines.  
\* These routines provide mapping to a fixed color map using equally spaced  
\* color values. Optional Floyd-Steinberg or ordered dithering is available.  
\*/

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\* rdrle.c  
\*

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\*  
\* This file contains routines to read input images in Utah RLE format.  
\* The Utah Raster Toolkit library is required (version 3.1 or later).  
\*  
\* These routines may need modification for non-Unix environments or  
\* specialized applications. As they stand, they assume input from  
\* an ordinary stdio stream. They further assume that reading begins  
\* at the start of the file; start\_input may need work if the  
\* user interface has already read some data (e.g., to determine that  
\* the file is indeed RLE format).

\*  
\* Based on code contributed by Mike Lijewski,  
\* with updates from Robert Hutchinson.  
\*/

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\* rdppm.c  
\*  
\* Copyright (C) 1991-1997, Thomas G. Lane.  
\* Modified 2009-2020 by Bill Allombert, Guido Vollbeding.  
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\*  
\* This file contains routines to read input images in PPM/PGM format.  
\* The extended 2-byte-per-sample raw PPM/PGM formats are supported.  
\* The PBMPLUS library is NOT required to compile this software  
\* (but it is highly useful as a set of PPM image manipulation programs).  
\*  
\* These routines may need modification for non-Unix environments or  
\* specialized applications. As they stand, they assume input from  
\* an ordinary stdio stream. They further assume that reading begins  
\* at the start of the file; start\_input may need work if the  
\* user interface has already read some data (e.g., to determine that  
\* the file is indeed PPM format).  
\*/  
/\* Portions of this code are based on the PBMPLUS library, which is:  
\*\*  
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/\*  
\* jdcoefct.c  
\*  
\*/

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\* Modified 2002-2020 by Guido Vollbeding.  
\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file contains the coefficient buffer controller for decompression.  
\* This controller is the top level of the JPEG decompressor proper.  
\* The coefficient buffer lies between entropy decoding and inverse-DCT steps.  
\*  
\* In buffered-image mode, this controller is the interface between  
\* input-oriented processing and output-oriented processing.  
\* Also, the input side (only) is used when reading a file for transcoding.  
\*/

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/\*

\* jdsample.c

\*

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\*  
\* This file contains upsampling routines.  
\*  
\* Upsampling input data is counted in "row groups". A row group  
\* is defined to be  $(v\_samp\_factor * DCT\_v\_scaled\_size / min\_DCT\_v\_scaled\_size)$   
\* sample rows of each component. Upsampling will normally produce  
\*  $max\_v\_samp\_factor$  pixel rows from each row group (but this could vary  
\* if the upsampler is applying a scale factor of its own).  
\*  
\* An excellent reference for image resampling is  
\* Digital Image Warping, George Wolberg, 1990.  
\* Pub. by IEEE Computer Society Press, Los Alamitos, CA. ISBN 0-8186-8944-7.  
\*/

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/\*

\* jcarith.c

\*

\* Developed 1997-2020 by Guido Vollbeding.  
\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file contains portable arithmetic entropy encoding routines for JPEG  
\* (implementing the ISO/IEC IS 10918-1 and CCITT Recommendation ITU-T T.81).  
\*  
\* Both sequential and progressive modes are supported in this single module.  
\*  
\* Suspension is not currently supported in this module.  
\*/

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/\*

\* jversion.h  
\*  
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\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file contains software version identification.  
\*/

Found in path(s):

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/\*

\* jmemnobs.c  
\*  
\* Copyright (C) 1992-1996, Thomas G. Lane.  
\* Modified 2019 by Guido Vollbeding.  
\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file provides a really simple implementation of the system-  
\* dependent portion of the JPEG memory manager. This implementation  
\* assumes that no backing-store files are needed: all required space  
\* can be obtained from malloc().  
\* This is very portable in the sense that it'll compile on almost anything,  
\* but you'd better have lots of main memory (or virtual memory) if you want  
\* to process big images.  
\* Note that the max\_memory\_to\_use option is respected by this implementation.  
\*/

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```
/*
 * jdmarker.c
 *
 * Copyright (C) 1991-1998, Thomas G. Lane.
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 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file contains routines to decode JPEG datastream markers.
 * Most of the complexity arises from our desire to support input
 * suspension: if not all of the data for a marker is available,
 * we must exit back to the application. On resumption, we reprocess
 * the marker.
 */
```

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```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdmarker.c
```

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```
/*
 * jpeglib.h
 *
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 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file defines the application interface for the JPEG library.
 * Most applications using the library need only include this file,
 * and perhaps jerror.h if they want to know the exact error codes.
 */
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jpeglib.h
```

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```
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 * jconfig.txt
 *
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 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file documents the configuration options that are required to
 * customize the JPEG software for a particular system.
 */
```

```

*
* The actual configuration options for a particular installation are stored
* in jconfig.h. On many machines, jconfig.h can be generated automatically
* or copied from one of the "canned" jconfig files that we supply. But if
* you need to generate a jconfig.h file by hand, this file tells you how.
*
* DO NOT EDIT THIS FILE --- IT WON'T ACCOMPLISH ANYTHING.
* EDIT A COPY NAMED JCONFIG.H.
*/

/*
* These symbols indicate the properties of your machine or compiler.
* #define the symbol if yes, #undef it if no.
*/

/* Does your compiler support function prototypes?
* (If not, you also need to use ansi2knr, see install.txt)
*/
#define HAVE_PROTOTYPES

/* Does your compiler support the declaration "unsigned char" ?
* How about "unsigned short" ?
*/
#define HAVE_UNSIGNED_CHAR
#define HAVE_UNSIGNED_SHORT

/* Define "void" as "char" if your compiler doesn't know about type void.
* NOTE: be sure to define void such that "void *" represents the most general
* pointer type, e.g., that returned by malloc().
*/
/* #define void char */

/* Define "const" as empty if your compiler doesn't know the "const" keyword.
*/
/* #define const */

/* Define this if an ordinary "char" type is unsigned.
* If you're not sure, leaving it undefined will work at some cost in speed.
* If you defined HAVE_UNSIGNED_CHAR then the speed difference is minimal.
*/
#undef CHAR_IS_UNSIGNED

/* Define this if your system has an ANSI-conforming <stddef.h> file.
*/
#define HAVE_STDDEF_H

/* Define this if your system has an ANSI-conforming <stdlib.h> file.

```

```

*/
#define HAVE_STDLIB_H

/* Define this if your system does not have an ANSI/SysV <string.h>,
 * but does have a BSD-style <strings.h>.
 */
#undef NEED_BSD_STRINGS

/* Define this if your system does not provide typedef size_t in any of the
 * ANSI-standard places (stddef.h, stdlib.h, or stdio.h), but places it in
 * <sys/types.h> instead.
 */
#undef NEED_SYS_TYPES_H

/* For 80x86 machines, you need to define NEED_FAR_POINTERS,
 * unless you are using a large-data memory model or 80386 flat-memory mode.
 * On less brain-damaged CPUs this symbol must not be defined.
 * (Defining this symbol causes large data structures to be referenced through
 * "far" pointers and to be allocated with a special version of malloc.)
 */
#undef NEED_FAR_POINTERS

/* Define this if your linker needs global names to be unique in less
 * than the first 15 characters.
 */
#undef NEED_SHORT_EXTERNAL_NAMES

/* Although a real ANSI C compiler can deal perfectly well with pointers to
 * unspecified structures (see "incomplete types" in the spec), a few pre-ANSI
 * and pseudo-ANSI compilers get confused. To keep one of these bozos happy,
 * define INCOMPLETE_TYPES_BROKEN. This is not recommended unless you
 * actually get "missing structure definition" warnings or errors while
 * compiling the JPEG code.
 */
#undef INCOMPLETE_TYPES_BROKEN

/* Define "boolean" as unsigned char, not enum, on Windows systems.
 */
#ifdef _WIN32
#ifndef __RPCNDR_H__ /* don't conflict if rpcnldr.h already read */
typedef unsigned char boolean;
#endif
#endif
#ifndef FALSE /* in case these macros already exist */
#define FALSE 0 /* values of boolean */
#endif
#ifndef TRUE
#define TRUE 1
#endif

```



```

#define HAVE_BOOLEAN /* prevent jmorecfg.h from redefining it */
#endif

/*
 * The following options affect code selection within the JPEG library,
 * but they don't need to be visible to applications using the library.
 * To minimize application namespace pollution, the symbols won't be
 * defined unless JPEG_INTERNALS has been defined.
 */

#ifndef JPEG_INTERNALS

/* Define this if your compiler implements ">>" on signed values as a logical
 * (unsigned) shift; leave it undefined if ">>" is a signed (arithmetic) shift,
 * which is the normal and rational definition.
 */
#undef RIGHT_SHIFT_IS_UNSIGNED

#endif /* JPEG_INTERNALS */

/*
 * The remaining options do not affect the JPEG library proper,
 * but only the sample applications cjpeg/djpeg (see cjpeg.c, djpeg.c).
 * Other applications can ignore these.
 */

#ifndef JPEG_CJPEG_DJPEG

/* These defines indicate which image (non-JPEG) file formats are allowed. */

#define BMP_SUPPORTED /* BMP image file format */
#define GIF_SUPPORTED /* GIF image file format */
#define PPM_SUPPORTED /* PBMPLUS PPM/PGM image file format */
#undef RLE_SUPPORTED /* Utah RLE image file format */
#define TARGA_SUPPORTED /* Targa image file format */

/* Define this if you want to name both input and output files on the command
 * line, rather than using stdout and optionally stdin. You MUST do this if
 * your system can't cope with binary I/O to stdin/stdout. See comments at
 * head of cjpeg.c or djpeg.c.
 */
#undef TWO_FILE_COMMANDLINE

/* Define this if your system needs explicit cleanup of temporary files.
 * This is crucial under MS-DOS, where the temporary "files" may be areas

```

```

* of extended memory; on most other systems it's not as important.
*/
#undef NEED_SIGNAL_CATCHER

/* By default, we open image files with fopen(...,"rb") or fopen(...,"wb").
* This is necessary on systems that distinguish text files from binary files,
* and is harmless on most systems that don't. If you have one of the rare
* systems that complains about the "b" spec, define this symbol.
*/
#undef DONT_USE_B_MODE

/* Define this if you want percent-done progress reports from cjpeg/djpeg.
*/
#undef PROGRESS_REPORT

#endif /* JPEG_CJPEG_DJPEG */

```

Found in path(s):

```

* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jconfig.txt
No license file was found, but licenses were detected in source scan.

```

```

/*
* jcparam.c
*
* Copyright (C) 1991-1998, Thomas G. Lane.
* Modified 2003-2022 by Guido Vollbeding.
* This file is part of the Independent JPEG Group's software.
* For conditions of distribution and use, see the accompanying README file.
*
* This file contains optional default-setting code for the JPEG compressor.
* Applications do not have to use this file, but those that don't use it
* must know a lot more about the innards of the JPEG code.
*/

```

Found in path(s):

```

* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jcparam.c
No license file was found, but licenses were detected in source scan.

```

#### IJG JPEG LIBRARY: FILE LIST

Copyright (C) 1994-2020, Thomas G. Lane, Guido Vollbeding.  
This file is part of the Independent JPEG Group's software.  
For conditions of distribution and use, see the accompanying README file.

Here is a road map to the files in the IJG JPEG distribution. The distribution includes the JPEG library proper, plus two application

programs ("cjpeg" and "djpeg") which use the library to convert JPEG files to and from some other popular image formats. A third application "jpegtran" uses the library to do lossless conversion between different variants of JPEG. There are also two stand-alone applications, "rdjpgcom" and "wrjpgcom".

## THE JPEG LIBRARY

=====

Include files:

jpeglib.h JPEG library's exported data and function declarations.  
jconfig.h Configuration declarations. Note: this file is not present in the distribution; it is generated during installation.  
jmorecfg.h Additional configuration declarations; need not be changed for a standard installation.  
jerror.h Declares JPEG library's error and trace message codes.  
jinclude.h Central include file used by all IJG .c files to reference system include files.  
jpegint.h JPEG library's internal data structures.  
jdct.h Private declarations for forward & reverse DCT subsystems.  
jmemsys.h Private declarations for memory management subsystem.  
jversion.h Version information.

Applications using the library should include jpeglib.h (which in turn includes jconfig.h and jmorecfg.h). Optionally, jerror.h may be included if the application needs to reference individual JPEG error codes. The other include files are intended for internal use and would not normally be included by an application program. (cjpeg/djpeg/etc do use jinclude.h, since its function is to improve portability of the whole IJG distribution. Most other applications will directly include the system include files they want, and hence won't need jinclude.h.)

C source code files:

These files contain most of the functions intended to be called directly by an application program:

jpegim.c Application program interface: core routines for compression.  
jpegstd.c Application program interface: standard compression.  
jpegim.c Application program interface: core routines for decompression.  
jpegstd.c Application program interface: standard decompression.  
jcomapi.c Application program interface routines common to compression and decompression.  
jparam.c Compression parameter setting helper routines.  
jtrans.c API and library routines for transcoding compression.

jdtrans.c API and library routines for transcoding decompression.

Compression side of the library:

jcinit.c Initialization: determines which other modules to use.  
jcmaster.c Master control: setup and inter-pass sequencing logic.  
jcmainct.c Main buffer controller (preprocessor => JPEG compressor).  
jcprepct.c Preprocessor buffer controller.  
jccoefct.c Buffer controller for DCT coefficient buffer.  
jccolor.c Color space conversion.  
jcsample.c Downsampling.  
jcdctmgr.c DCT manager (DCT implementation selection & control).  
jfdctint.c Forward DCT using slow-but-accurate integer method.  
jfdctfst.c Forward DCT using faster, less accurate integer method.  
jfdctflt.c Forward DCT using floating-point arithmetic.  
jchuff.c Huffman entropy coding.  
jcarith.c Arithmetic entropy coding.  
jcmarker.c JPEG marker writing.  
jdatadst.c Data destination managers for memory and stdio output.

Decompression side of the library:

jdmaster.c Master control: determines which other modules to use.  
jdinput.c Input controller: controls input processing modules.  
jdmainct.c Main buffer controller (JPEG decompressor => postprocessor).  
jdcoefct.c Buffer controller for DCT coefficient buffer.  
jdpostct.c Postprocessor buffer controller.  
jdmarker.c JPEG marker reading.  
jdhuff.c Huffman entropy decoding.  
jdarith.c Arithmetic entropy decoding.  
jddctmgr.c IDCT manager (IDCT implementation selection & control).  
jidctint.c Inverse DCT using slow-but-accurate integer method.  
jidctfst.c Inverse DCT using faster, less accurate integer method.  
jidctflt.c Inverse DCT using floating-point arithmetic.  
jdsample.c Upsampling.  
jdcolor.c Color space conversion.  
jdmerge.c Merged upsampling/color conversion (faster, lower quality).  
jquant1.c One-pass color quantization using a fixed-spacing colormap.  
jquant2.c Two-pass color quantization using a custom-generated colormap.  
Also handles one-pass quantization to an externally given map.  
jdatasrc.c Data source managers for memory and stdio input.

Support files for both compression and decompression:

jaricom.c Tables for common use in arithmetic entropy encoding and decoding routines.  
jerror.c Standard error handling routines (application replaceable).  
jmemmgr.c System-independent (more or less) memory management code.

jutils.c Miscellaneous utility routines.

jmemmgr.c relies on a system-dependent memory management module. The IJG distribution includes the following implementations of the system-dependent module:

jmemnobs.c "No backing store": assumes adequate virtual memory exists.

jmemansi.c Makes temporary files with ANSI-standard routine tmpfile().

jmemname.c Makes temporary files with program-generated file names.

jmemdos.c Custom implementation for MS-DOS (16-bit environment only):  
can use extended and expanded memory as well as temp files.

jmemmac.c Custom implementation for Apple Macintosh.

Exactly one of the system-dependent modules should be configured into an installed JPEG library (see install.txt for hints about which one to use).

On unusual systems you may find it worthwhile to make a special system-dependent memory manager.

Non-C source code files:

jmemdosa.asm 80x86 assembly code support for jmemdos.c; used only in MS-DOS-specific configurations of the JPEG library.

## CJPEG/DJPEG/JPEGTRAN

=====

Include files:

cdjpeg.h Declarations shared by cjpeg/djpeg/jpegtran modules.

cderror.h Additional error and trace message codes for cjpeg et al.

transupp.h Declarations for jpegtran support routines in transupp.c.

C source code files:

cjpeg.c Main program for cjpeg.

cjpegalt.c Main program for cjpeg with alternate user interface.

djpeg.c Main program for djpeg.

djpegalt.c Main program for djpeg with alternate user interface.

jpegtran.c Main program for jpegtran.

cdjpeg.c Utility routines used by all three programs.

rdcolmap.c Code to read a colormap file for djpeg's "-map" switch.

rdswitch.c Code to process some of cjpeg's more complex switches.  
Also used by jpegtran.

transupp.c Support code for jpegtran: lossless image manipulations.

Image file reader modules for cjpeg:

rdbmp.c BMP file input.  
rdgif.c GIF file input.  
rdppm.c PPM/PGM file input.  
rdrle.c Utah RLE file input.  
rdtarga.c Targa file input.

Image file writer modules for djpeg:

wrbmp.c BMP file output.  
wrgif.c GIF file output.  
wrppm.c PPM/PGM file output.  
wrrle.c Utah RLE file output.  
wrtarga.c Targa file output.

#### RDJPGCOM/WRJPGCOM

=====

C source code files:

rdjpgcom.c Stand-alone rdjpgcom application.  
wrjpgcom.c Stand-alone wrjpgcom application.

These programs do not depend on the IJG library. They do use jconfig.h and jinclude.h, only to improve portability.

#### ADDITIONAL FILES

=====

Documentation (see README for a guide to the documentation files):

README Master documentation file.  
\*.txt Other documentation files.  
\*.1 Documentation in Unix man page format.  
change.log Version-to-version change highlights.  
example.c Sample code for calling JPEG library.

Configuration/installation files and programs (see install.txt for more info):

configure Unix shell script to perform automatic configuration.  
configure.ac Source file for use with Autoconf to generate configure.  
ltmain.sh Support scripts for configure (from GNU libtool).  
config.guess  
config.sub  
depcomp  
missing

ar-lib  
compile  
install-sh Install shell script for those Unix systems lacking one.  
Makefile.in Makefile input for configure.  
Makefile.am Source file for use with Automake to generate Makefile.in.  
ckconfig.c Program to generate jconfig.h on non-Unix systems.  
jconfig.txt Template for making jconfig.h by hand.  
mak\*.\* Sample makefiles for particular systems.  
jconfig.\* Sample jconfig.h for particular systems.  
libjpeg.map Script to generate shared library with versioned symbols.  
libjpeg.pc.in libjpeg.pc pkg-config file input for configure.  
aclocal.m4 M4 macro definitions for use with Autoconf.

Test files (see install.txt for test procedure):

test\*.\* Source and comparison files for confidence test.  
These are binary image files, NOT text files.

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/filelist.txt  
No license file was found, but licenses were detected in source scan.

/\*

\* jfdctfst.c

\*

\* Copyright (C) 1994-1996, Thomas G. Lane.

\* Modified 2003-2017 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains a fast, not so accurate integer implementation of the

\* forward DCT (Discrete Cosine Transform).

\*

\* A 2-D DCT can be done by 1-D DCT on each row followed by 1-D DCT

\* on each column. Direct algorithms are also available, but they are

\* much more complex and seem not to be any faster when reduced to code.

\*

\* This implementation is based on Arai, Agui, and Nakajima's algorithm for

\* scaled DCT. Their original paper (Trans. IEICE E-71(11):1095) is in

\* Japanese, but the algorithm is described in the Pennebaker & Mitchell

\* JPEG textbook (see REFERENCES section in file README). The following code

\* is based directly on figure 4-8 in P&M.

\* While an 8-point DCT cannot be done in less than 11 multiplies, it is

\* possible to arrange the computation so that many of the multiplies are

\* simple scalings of the final outputs. These multiplies can then be

\* folded into the multiplications or divisions by the JPEG quantization

\* table entries. The AA&N method leaves only 5 multiplies and 29 adds

\* to be done in the DCT itself.

\* The primary disadvantage of this method is that with fixed-point math,  
\* accuracy is lost due to imprecise representation of the scaled  
\* quantization values. The smaller the quantization table entry, the less  
\* precise the scaled value, so this implementation does worse with high-  
\* quality-setting files than with low-quality ones.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jfdctfst.c  
No license file was found, but licenses were detected in source scan.

/\*

\* jdcolor.c

\*

\* Copyright (C) 1991-1997, Thomas G. Lane.

\* Modified 2011-2020 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains output colorspace conversion routines.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdcolor.c  
No license file was found, but licenses were detected in source scan.

/\*

\* jpegtran.c

\*

\* Copyright (C) 1995-2019, Thomas G. Lane, Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains a command-line user interface for JPEG transcoding.

\* It is very similar to cjpeg.c, and partly to djpeg.c, but provides

\* lossless transcoding between different JPEG file formats. It also

\* provides some lossless and sort-of-lossless transformations of JPEG data.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jpegtran.c  
No license file was found, but licenses were detected in source scan.

/\*

\* jfdctflt.c

\*

\* Copyright (C) 1994-1996, Thomas G. Lane.

\* Modified 2003-2017 by Guido Vollbeding.



\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file contains a floating-point implementation of the  
\* forward DCT (Discrete Cosine Transform).  
\*  
\* This implementation should be more accurate than either of the integer  
\* DCT implementations. However, it may not give the same results on all  
\* machines because of differences in roundoff behavior. Speed will depend  
\* on the hardware's floating point capacity.  
\*  
\* A 2-D DCT can be done by 1-D DCT on each row followed by 1-D DCT  
\* on each column. Direct algorithms are also available, but they are  
\* much more complex and seem not to be any faster when reduced to code.  
\*  
\* This implementation is based on Arai, Agui, and Nakajima's algorithm for  
\* scaled DCT. Their original paper (Trans. IEICE E-71(11):1095) is in  
\* Japanese, but the algorithm is described in the Pennebaker & Mitchell  
\* JPEG textbook (see REFERENCES section in file README). The following code  
\* is based directly on figure 4-8 in P&M.  
\* While an 8-point DCT cannot be done in less than 11 multiplies, it is  
\* possible to arrange the computation so that many of the multiplies are  
\* simple scalings of the final outputs. These multiplies can then be  
\* folded into the multiplications or divisions by the JPEG quantization  
\* table entries. The AA&N method leaves only 5 multiplies and 29 adds  
\* to be done in the DCT itself.  
\* The primary disadvantage of this method is that with a fixed-point  
\* implementation, accuracy is lost due to imprecise representation of the  
\* scaled quantization values. However, that problem does not arise if  
\* we use floating point arithmetic.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jfdctflt.c

No license file was found, but licenses were detected in source scan.

/\*

\* jmemdos.c

\*

\* Copyright (C) 1992-1997, Thomas G. Lane.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file provides an MS-DOS-compatible implementation of the system-

\* dependent portion of the JPEG memory manager. Temporary data can be

\* stored in extended or expanded memory as well as in regular DOS files.

\*

\* If you use this file, you must be sure that NEED\_FAR\_POINTERS is defined

\* if you compile in a small-data memory model; it should NOT be defined if  
\* you use a large-data memory model. This file is not recommended if you  
\* are using a flat-memory-space 386 environment such as DJGCC or Watcom C.  
\* Also, this code will NOT work if struct fields are aligned on greater than  
\* 2-byte boundaries.  
\*  
\* Based on code contributed by Ge' Weijers.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jmemdos.c  
No license file was found, but licenses were detected in source scan.

; For conditions of distribution and use, see the accompanying README file.

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jmemdosa.asm  
No license file was found, but licenses were detected in source scan.

/\*

\* jdpostct.c

\*

\* Copyright (C) 1994-1996, Thomas G. Lane.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains the decompression postprocessing controller.

\* This controller manages the upsampling, color conversion, and color

\* quantization/reduction steps; specifically, it controls the buffering

\* between upsample/color conversion and color quantization/reduction.

\*

\* If no color quantization/reduction is required, then this module has no

\* work to do, and it just hands off to the upsample/color conversion code.

\* An integrated upsample/convert/quantize process would replace this module

\* entirely.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdpostct.c  
No license file was found, but licenses were detected in source scan.

/\*

\* jdarith.c

\*

\* Developed 1997-2020 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains portable arithmetic entropy decoding routines for JPEG  
\* (implementing the ISO/IEC IS 10918-1 and CCITT Recommendation ITU-T T.81).  
\*  
\* Both sequential and progressive modes are supported in this single module.  
\*  
\* Suspension is not currently supported in this module.  
\*/

Found in path(s):

\*/opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdarith.c  
No license file was found, but licenses were detected in source scan.

/\*

\* rdtarga.c

/\*

\* Copyright (C) 1991-1996, Thomas G. Lane.

\* Modified 2017-2019 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

/\*

\* This file contains routines to read input images in Targa format.

/\*

\* These routines may need modification for non-Unix environments or

\* specialized applications. As they stand, they assume input from

\* an ordinary stdio stream. They further assume that reading begins

\* at the start of the file; start\_input may need work if the

\* user interface has already read some data (e.g., to determine that

\* the file is indeed Targa format).

/\*

\* Based on code contributed by Lee Daniel Crocker.

\*/

Found in path(s):

\*/opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/rdtarga.c  
No license file was found, but licenses were detected in source scan.

/\*

\* jinclude.h

/\*

\* Copyright (C) 1991-1994, Thomas G. Lane.

\* Modified 2017 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

/\*

\* This file exists to provide a single place to fix any problems with

\* including the wrong system include files. (Common problems are taken

\* care of by the standard jconfig symbols, but on really weird systems

\* you may have to edit this file.)

\*  
\* NOTE: this file is NOT intended to be included by applications using the  
\* JPEG library. Most applications need only include jpeglib.h.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jinclude.h  
No license file was found, but licenses were detected in source scan.

/\*

\* jidctflt.c

\*

\* Copyright (C) 1994-1998, Thomas G. Lane.  
\* Modified 2010-2017 by Guido Vollbeding.  
\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains a floating-point implementation of the  
\* inverse DCT (Discrete Cosine Transform). In the IJG code, this routine  
\* must also perform dequantization of the input coefficients.

\*

\* This implementation should be more accurate than either of the integer  
\* IDCT implementations. However, it may not give the same results on all  
\* machines because of differences in roundoff behavior. Speed will depend  
\* on the hardware's floating point capacity.

\*

\* A 2-D IDCT can be done by 1-D IDCT on each column followed by 1-D IDCT  
\* on each row (or vice versa, but it's more convenient to emit a row at  
\* a time). Direct algorithms are also available, but they are much more  
\* complex and seem not to be any faster when reduced to code.

\*

\* This implementation is based on Arai, Agui, and Nakajima's algorithm for  
\* scaled DCT. Their original paper (Trans. IEICE E-71(11):1095) is in  
\* Japanese, but the algorithm is described in the Pennebaker & Mitchell  
\* JPEG textbook (see REFERENCES section in file README). The following code  
\* is based directly on figure 4-8 in P&M.

\* While an 8-point DCT cannot be done in less than 11 multiplies, it is  
\* possible to arrange the computation so that many of the multiplies are  
\* simple scalings of the final outputs. These multiplies can then be  
\* folded into the multiplications or divisions by the JPEG quantization  
\* table entries. The AA&N method leaves only 5 multiplies and 29 adds  
\* to be done in the DCT itself.

\* The primary disadvantage of this method is that with a fixed-point  
\* implementation, accuracy is lost due to imprecise representation of the  
\* scaled quantization values. However, that problem does not arise if  
\* we use floating point arithmetic.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jidctflt.c

No license file was found, but licenses were detected in source scan.

/\*

\* jcrepct.c

\*

\* Copyright (C) 1994-1996, Thomas G. Lane.

\* Modified 2003-2020 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains the compression preprocessing controller.

\* This controller manages the color conversion, downsampling,

\* and edge expansion steps.

\*

\* Most of the complexity here is associated with buffering input rows

\* as required by the downsampler. See the comments at the head of

\* jcsample.c for the downsampler's needs.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jcrepct.c

No license file was found, but licenses were detected in source scan.

/\*

\* cjpeg.c

\*

\* Copyright (C) 1991-1998, Thomas G. Lane.

\* Modified 2003-2013 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains a command-line user interface for the JPEG compressor.

\* It should work on any system with Unix- or MS-DOS-style command lines.

\*

\* Two different command line styles are permitted, depending on the

\* compile-time switch TWO\_FILE\_COMMANDLINE:

\* cjpeg [options] inputfile outputfile

\* cjpeg [options] [inputfile]

\* In the second style, output is always to standard output, which you'd

\* normally redirect to a file or pipe to some other program. Input is

\* either from a named file or from standard input (typically redirected).

\* The second style is convenient on Unix but is unhelpful on systems that

\* don't support pipes. Also, you MUST use the first style if your system

\* doesn't do binary I/O to stdin/stdout.

\* To simplify script writing, the "-outfile" switch is provided. The syntax

\* cjpeg [options] -outfile outputfile inputfile

\* works regardless of which command line style is used.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/cjpeg.c

No license file was found, but licenses were detected in source scan.

## IJG JPEG LIBRARY: CODING RULES

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This file is part of the Independent JPEG Group's software.

For conditions of distribution and use, see the accompanying README file.

Since numerous people will be contributing code and bug fixes, it's important to establish a common coding style. The goal of using similar coding styles is much more important than the details of just what that style is.

In general we follow the recommendations of "Recommended C Style and Coding Standards" revision 6.1 (Cannon et al. as modified by Spencer, Keppel and Brader). This document is available in the IJG FTP archive (see `jpeg/doc/cstyle.ms.tbl.Z`, or `cstyle.txt.Z` for those without `nroff/tbl`).

Block comments should be laid out thusly:

/\*

\* Block comments in this style.

\*/

We indent statements in K&R style, e.g.,

```
if (test) {
    then-part;
} else {
    else-part;
}
```

with two spaces per indentation level. (This indentation convention is handled automatically by GNU Emacs and many other text editors.)

Multi-word names should be written in lower case with underscores, e.g., `multi_word_name` (not `multiWordName`). Preprocessor symbols and enum constants are similar but upper case (`MULTI_WORD_NAME`). Names should be unique within the first fifteen characters. (On some older systems, global names must be unique within six characters. We accommodate this without cluttering the source code by using macros to substitute shorter names.)

We use function prototypes everywhere; we rely on automatic source code transformation to feed prototype-less C compilers. Transformation is done by the simple and portable tool `'ansi2knr.c'` (courtesy of Ghostscript).

ansi2knr is not very bright, so it imposes a format requirement on function declarations: the function name MUST BEGIN IN COLUMN 1. Thus all functions should be written in the following style:

```
LOCAL(int *)
function_name (int a, char *b)
{
    code...
}
```

Note that each function definition must begin with GLOBAL(type), LOCAL(type), or METHODDEF(type). These macros expand to "static type" or just "type" as appropriate. They provide a readable indication of the routine's usage and can readily be changed for special needs. (For instance, special linkage keywords can be inserted for use in Windows DLLs.)

ansi2knr does not transform method declarations (function pointers in structs). We handle these with a macro JMETHOD, defined as

```
#ifdef HAVE_PROTOTYPES
#define JMETHOD(type,methodname,arglist) type (*methodname) arglist
#else
#define JMETHOD(type,methodname,arglist) type (*methodname) ()
#endif
```

which is used like this:

```
struct function_pointers {
    JMETHOD(void, init_entropy_encoder, (int somearg, jparms *jp));
    JMETHOD(void, term_entropy_encoder, (void));
};
```

Note the set of parentheses surrounding the parameter list.

A similar solution is used for forward and external function declarations (see the EXTERN and JPP macros).

If the code is to work on non-ANSI compilers, we cannot rely on a prototype declaration to coerce actual parameters into the right types. Therefore, use explicit casts on actual parameters whenever the actual parameter type is not identical to the formal parameter. Beware of implicit conversions to "int".

It seems there are some non-ANSI compilers in which the sizeof() operator is defined to return int, yet size\_t is defined as long. Needless to say, this is brain-damaged. Always use the SIZEOF() macro in place of sizeof(), so that the result is guaranteed to be of type size\_t.

The JPEG library is intended to be used within larger programs. Furthermore, we want it to be reentrant so that it can be used by applications that process multiple images concurrently. The following rules support these requirements:

1. Avoid direct use of file I/O, "malloc", error report printouts, etc; pass these through the common routines provided.
2. Minimize global namespace pollution. Functions should be declared static wherever possible. (Note that our method-based calling conventions help this a lot: in many modules only the initialization function will ever need to be called directly, so only that function need be externally visible.) All global function names should begin with "jpeg\_", and should have an abbreviated name (unique in the first six characters) substituted by macro when NEED\_SHORT\_EXTERNAL\_NAMES is set.
3. Don't use global variables; anything that must be used in another module should be in the common data structures.
4. Don't use static variables except for read-only constant tables. Variables that should be private to a module can be placed into private structures (see the system architecture document, structure.txt).
5. Source file names should begin with "j" for files that are part of the library proper; source files that are not part of the library, such as cjpeg.c and djpeg.c, do not begin with "j". Keep source file names to eight characters (plus ".c" or ".h", etc) to make life easy for MS-DOSers. Keep compression and decompression code in separate source files --- some applications may want only one half of the library.

Note: these rules (particularly #4) are not followed religiously in the modules that are used in cjpeg/djpeg but are not part of the JPEG library proper. Those modules are not really intended to be used in other applications.

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/coderules.txt

No license file was found, but licenses were detected in source scan.

/\*

\* jquant2.c

\*

\* Copyright (C) 1991-1996, Thomas G. Lane.

\* Modified 2011-2020 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains 2-pass color quantization (color mapping) routines.

\* These routines provide selection of a custom color map for an image,

\* followed by mapping of the image to that color map, with optional

\* Floyd-Steinberg dithering.

\* It is also possible to use just the second pass to map to an arbitrary

\* externally-given color map.



\*  
\* Note: ordered dithering is not supported, since there isn't any fast  
\* way to compute intercolor distances; it's unclear that ordered dither's  
\* fundamental assumptions even hold with an irregularly spaced color map.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jquant2.c  
No license file was found, but licenses were detected in source scan.

/\*

\* jerror.h

\*

\* Copyright (C) 1994-1997, Thomas G. Lane.  
\* Modified 1997-2018 by Guido Vollbeding.  
\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file defines the error and message codes for the JPEG library.  
\* Edit this file to add new codes, or to translate the message strings to  
\* some other language.  
\* A set of error-reporting macros are defined too. Some applications using  
\* the JPEG library may wish to include this file to get the error codes  
\* and/or the macros.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jerror.h  
No license file was found, but licenses were detected in source scan.

/\*

\* jmemname.c

\*

\* Copyright (C) 1992-1997, Thomas G. Lane.  
\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file provides a generic implementation of the system-dependent  
\* portion of the JPEG memory manager. This implementation assumes that  
\* you must explicitly construct a name for each temp file.  
\* Also, the problem of determining the amount of memory available  
\* is shoved onto the user.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jmemname.c  
No license file was found, but licenses were detected in source scan.

```
/*
 * jpegint.h
 *
 * Copyright (C) 1991-1997, Thomas G. Lane.
 * Modified 1997-2020 by Guido Vollbeding.
 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file provides common declarations for the various JPEG modules.
 * These declarations are considered internal to the JPEG library; most
 * applications using the library shouldn't need to include this file.
 */
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jpegint.h
```

No license file was found, but licenses were detected in source scan.

```
/*
 * jctrans.c
 *
 * Copyright (C) 1995-1998, Thomas G. Lane.
 * Modified 2000-2020 by Guido Vollbeding.
 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file contains library routines for transcoding compression,
 * that is, writing raw DCT coefficient arrays to an output JPEG file.
 * The routines in jcapimin.c will also be needed by a transcoder.
 */
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jctrans.c
```

No license file was found, but licenses were detected in source scan.

```
/*
 * jcmarker.c
 *
 * Copyright (C) 1991-1998, Thomas G. Lane.
 * Modified 2003-2019 by Guido Vollbeding.
 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file contains routines to write JPEG datastream markers.
 */
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jcmarker.c
```

No license file was found, but licenses were detected in source scan.

```
/*
 * rdbmp.c
 *
 * Copyright (C) 1994-1996, Thomas G. Lane.
 * Modified 2009-2019 by Guido Vollbeding.
 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file contains routines to read input images in Microsoft "BMP"
 * format (MS Windows 3.x, OS/2 1.x, and OS/2 2.x flavors).
 * Currently, only 8-, 24-, and 32-bit images are supported, not 1-bit or
 * 4-bit (feeding such low-depth images into JPEG would be silly anyway).
 * Also, we don't support RLE-compressed files.
 *
 * These routines may need modification for non-Unix environments or
 * specialized applications. As they stand, they assume input from
 * an ordinary stdio stream. They further assume that reading begins
 * at the start of the file; start_input may need work if the
 * user interface has already read some data (e.g., to determine that
 * the file is indeed BMP format).
 *
 * This code contributed by James Arthur Boucher.
 */
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/rdbmp.c
```

No license file was found, but licenses were detected in source scan.

```
/*
 * jdmaster.c
 *
 * Copyright (C) 1991-1997, Thomas G. Lane.
 * Modified 2002-2020 by Guido Vollbeding.
 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file contains master control logic for the JPEG decompressor.
 * These routines are concerned with selecting the modules to be executed
 * and with determining the number of passes and the work to be done in each
 * pass.
 */
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdmaster.c
```

No license file was found, but licenses were detected in source scan.

```
/*
 * rdswitch.c
 *
 * Copyright (C) 1991-1996, Thomas G. Lane.
 * Modified 2003-2020 by Guido Vollbeding.
 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file contains routines to process some of cjpeg's more complicated
 * command-line switches. Switches processed here are:
 * -qtables file Read quantization tables from text file
 * -scans file Read scan script from text file
 * -quality N[,N,...] Set quality ratings
 * -qslots N[,N,...] Set component quantization table selectors
 * -sample HxV[,HxV,...] Set component sampling factors
 */
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/rdswitch.c
```

No license file was found, but licenses were detected in source scan.

## IJG JPEG LIBRARY: SYSTEM ARCHITECTURE

Copyright (C) 1991-2013, Thomas G. Lane, Guido Vollbeding.

This file is part of the Independent JPEG Group's software.

For conditions of distribution and use, see the accompanying README file.

This file provides an overview of the architecture of the IJG JPEG software; that is, the functions of the various modules in the system and the interfaces between modules. For more precise details about any data structure or calling convention, see the include files and comments in the source code.

We assume that the reader is already somewhat familiar with the JPEG standard.

The README file includes references for learning about JPEG. The file libjpeg.txt describes the library from the viewpoint of an application programmer using the library; it's best to read that file before this one.

Also, the file coderules.txt describes the coding style conventions we use.

In this document, JPEG-specific terminology follows the JPEG standard:

A "component" means a color channel, e.g., Red or Luminance.

A "sample" is a single component value (i.e., one number in the image data).

A "coefficient" is a frequency coefficient (a DCT transform output number).

A "block" is an array of samples or coefficients.

An "MCU" (minimum coded unit) is an interleaved set of blocks of size determined by the sampling factors, or a single block in a noninterleaved scan.

We do not use the terms "pixel" and "sample" interchangeably. When we say

pixel, we mean an element of the full-size image, while a sample is an element of the downsampled image. Thus the number of samples may vary across components while the number of pixels does not. (This terminology is not used rigorously throughout the code, but it is used in places where confusion would otherwise result.)

### \*\*\* System features \*\*\*

The IJG distribution contains two parts:

- \* A subroutine library for JPEG compression and decompression.
- \* cjpeg/djpeg, two sample applications that use the library to transform JFIF JPEG files to and from several other image formats.

cjpeg/djpeg are of no great intellectual complexity: they merely add a simple command-line user interface and I/O routines for several uncompressed image formats. This document concentrates on the library itself.

We desire the library to be capable of supporting all JPEG baseline, extended sequential, and progressive DCT processes. The library does not support the hierarchical or lossless processes defined in the standard.

Within these limits, any set of compression parameters allowed by the JPEG spec should be readable for decompression. (We can be more restrictive about what formats we can generate.) Although the system design allows for all parameter values, some uncommon settings are not yet implemented and may never be; nonintegral sampling ratios are the prime example. Furthermore, we treat 8-bit vs. 12-bit data precision as a compile-time switch, not a run-time option, because most machines can store 8-bit pixels much more compactly than 12-bit.

By itself, the library handles only interchange JPEG datastreams --- in particular the widely used JFIF file format. The library can be used by surrounding code to process interchange or abbreviated JPEG datastreams that are embedded in more complex file formats. (For example, libtiff uses this library to implement JPEG compression within the TIFF file format.)

The library includes a substantial amount of code that is not covered by the JPEG standard but is necessary for typical applications of JPEG. These functions preprocess the image before JPEG compression or postprocess it after decompression. They include colorspace conversion, downsampling/upsampling, and color quantization. This code can be omitted if not needed.

A wide range of quality vs. speed tradeoffs are possible in JPEG processing, and even more so in decompression postprocessing. The decompression library provides multiple implementations that cover most of the useful tradeoffs, ranging from very-high-quality down to fast-preview operation. On the compression side we have generally not provided low-quality choices, since compression is normally less time-critical. It should be understood that the

low-quality modes may not meet the JPEG standard's accuracy requirements; nonetheless, they are useful for viewers.

### \*\*\* Portability issues \*\*\*

Portability is an essential requirement for the library. The key portability issues that show up at the level of system architecture are:

1. Memory usage. We want the code to be able to run on PC-class machines with limited memory. Images should therefore be processed sequentially (in strips), to avoid holding the whole image in memory at once. Where a full-image buffer is necessary, we should be able to use either virtual memory or temporary files.
2. Near/far pointer distinction. To run efficiently on 80x86 machines, the code should distinguish "small" objects (kept in near data space) from "large" ones (kept in far data space). This is an annoying restriction, but fortunately it does not impact code quality for less brain-damaged machines, and the source code clutter turns out to be minimal with sufficient use of pointer typedefs.
3. Data precision. We assume that "char" is at least 8 bits, "short" and "int" at least 16, "long" at least 32. The code will work fine with larger data sizes, although memory may be used inefficiently in some cases. However, the JPEG compressed datastream must ultimately appear on external storage as a sequence of 8-bit bytes if it is to conform to the standard. This may pose a problem on machines where char is wider than 8 bits. The library represents compressed data as an array of values of typedef JOCTET. If no data type exactly 8 bits wide is available, custom data source and data destination modules must be written to unpack and pack the chosen JOCTET datatype into 8-bit external representation.

### \*\*\* System overview \*\*\*

The compressor and decompressor are each divided into two main sections: the JPEG compressor or decompressor proper, and the preprocessing or postprocessing functions. The interface between these two sections is the image data that the official JPEG spec regards as its input or output: this data is in the colorspace to be used for compression, and it is downsampled to the sampling factors to be used. The preprocessing and postprocessing steps are responsible for converting a normal image representation to or from this form. (Those few applications that want to deal with YCbCr downsampled data can skip the preprocessing or postprocessing step.)

Looking more closely, the compressor library contains the following main elements:

Preprocessing:

- \* Color space conversion (e.g., RGB to YCbCr).
- \* Edge expansion and downsampling. Optionally, this step can do simple smoothing --- this is often helpful for low-quality source data.

JPEG proper:

- \* MCU assembly, DCT, quantization.
- \* Entropy coding (sequential or progressive, Huffman or arithmetic).

In addition to these modules we need overall control, marker generation, and support code (memory management & error handling). There is also a module responsible for physically writing the output data --- typically this is just an interface to `fwrite()`, but some applications may need to do something else with the data.

The decompressor library contains the following main elements:

JPEG proper:

- \* Entropy decoding (sequential or progressive, Huffman or arithmetic).
- \* Dequantization, inverse DCT, MCU disassembly.

Postprocessing:

- \* Upsampling. Optionally, this step may be able to do more general rescaling of the image.
- \* Color space conversion (e.g., YCbCr to RGB). This step may also provide gamma adjustment [ currently it does not ].
- \* Optional color quantization (e.g., reduction to 256 colors).
- \* Optional color precision reduction (e.g., 24-bit to 15-bit color).  
[This feature is not currently implemented.]

We also need overall control, marker parsing, and a data source module.

The support code (memory management & error handling) can be shared with the compression half of the library.

There may be several implementations of each of these elements, particularly in the decompressor, where a wide range of speed/quality tradeoffs is very useful. It must be understood that some of the best speedups involve merging adjacent steps in the pipeline. For example, upsampling, color space conversion, and color quantization might all be done at once when using a low-quality ordered-dither technique. The system architecture is designed to allow such merging where appropriate.

Note: it is convenient to regard edge expansion (padding to block boundaries) as a preprocessing/postprocessing function, even though the JPEG spec includes it in compression/decompression. We do this because downsampling/upsampling can be simplified a little if they work on padded data: it's not necessary to have special cases at the right and bottom edges. Therefore the interface buffer is always an integral number of blocks wide and high, and we expect

compression preprocessing to pad the source data properly. Padding will occur only to the next block (block\_size-sample) boundary. In an interleaved-scan situation, additional dummy blocks may be used to fill out MCUs, but the MCU assembly and disassembly logic will create or discard these blocks internally. (This is advantageous for speed reasons, since we avoid DCTing the dummy blocks. It also permits a small reduction in file size, because the compressor can choose dummy block contents so as to minimize their size in compressed form. Finally, it makes the interface buffer specification independent of whether the file is actually interleaved or not.) Applications that wish to deal directly with the downsampled data must provide similar buffering and padding for odd-sized images.

\*\*\* Poor man's object-oriented programming \*\*\*

It should be clear by now that we have a lot of quasi-independent processing steps, many of which have several possible behaviors. To avoid cluttering the code with lots of switch statements, we use a simple form of object-style programming to separate out the different possibilities.

For example, two different color quantization algorithms could be implemented as two separate modules that present the same external interface; at runtime, the calling code will access the proper module indirectly through an "object".

We can get the limited features we need while staying within portable C. The basic tool is a function pointer. An "object" is just a struct containing one or more function pointer fields, each of which corresponds to a method name in real object-oriented languages. During initialization we fill in the function pointers with references to whichever module we have determined we need to use in this run. Then invocation of the module is done by indirecting through a function pointer; on most machines this is no more expensive than a switch statement, which would be the only other way of making the required run-time choice. The really significant benefit, of course, is keeping the source code clean and well structured.

We can also arrange to have private storage that varies between different implementations of the same kind of object. We do this by making all the module-specific object structs be separately allocated entities, which will be accessed via pointers in the master compression or decompression struct. The "public" fields or methods for a given kind of object are specified by a commonly known struct. But a module's initialization code can allocate a larger struct that contains the common struct as its first member, plus additional private fields. With appropriate pointer casting, the module's internal functions can access these private fields. (For a simple example, see jdatadst.c, which implements the external interface specified by struct jpeg\_destination\_mgr, but adds extra fields.)

(Of course this would all be a lot easier if we were using C++, but we are



not yet prepared to assume that everyone has a C++ compiler.)

An important benefit of this scheme is that it is easy to provide multiple versions of any method, each tuned to a particular case. While a lot of precalculation might be done to select an optimal implementation of a method, the cost per invocation is constant. For example, the upsampling step might have a "generic" method, plus one or more "hardwired" methods for the most popular sampling factors; the hardwired methods would be faster because they'd use straight-line code instead of for-loops. The cost to determine which method to use is paid only once, at startup, and the selection criteria are hidden from the callers of the method.

This plan differs a little bit from usual object-oriented structures, in that only one instance of each object class will exist during execution. The reason for having the class structure is that on different runs we may create different instances (choose to execute different modules). You can think of the term "method" as denoting the common interface presented by a particular set of interchangeable functions, and "object" as denoting a group of related methods, or the total shared interface behavior of a group of modules.

\*\*\* Overall control structure \*\*\*

We previously mentioned the need for overall control logic in the compression and decompression libraries. In IJG implementations prior to v5, overall control was mostly provided by "pipeline control" modules, which proved to be large, unwieldy, and hard to understand. To improve the situation, the control logic has been subdivided into multiple modules. The control modules consist of:

1. Master control for module selection and initialization. This has two responsibilities:

1A. Startup initialization at the beginning of image processing.

The individual processing modules to be used in this run are selected and given initialization calls.

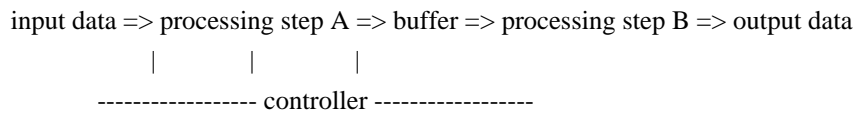
1B. Per-pass control. This determines how many passes will be performed and calls each active processing module to configure itself

appropriately at the beginning of each pass. End-of-pass processing, where necessary, is also invoked from the master control module.

Method selection is partially distributed, in that a particular processing module may contain several possible implementations of a particular method, which it will select among when given its initialization call. The master control code need only be concerned with decisions that affect more than one module.

2. Data buffering control. A separate control module exists for each inter-processing-step data buffer. This module is responsible for invoking the processing steps that write or read that data buffer.

Each buffer controller sees the world as follows:



The controller knows the dataflow requirements of steps A and B: how much data they want to accept in one chunk and how much they output in one chunk. Its function is to manage its buffer and call A and B at the proper times.

A data buffer control module may itself be viewed as a processing step by a higher-level control module; thus the control modules form a binary tree with elementary processing steps at the leaves of the tree.

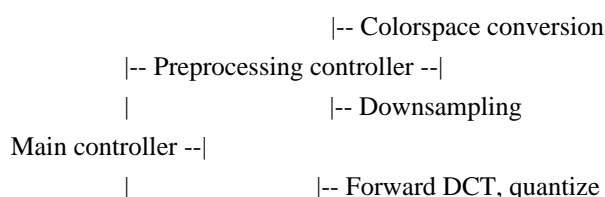
The control modules are objects. A considerable amount of flexibility can be had by replacing implementations of a control module. For example:

- \* Merging of adjacent steps in the pipeline is done by replacing a control module and its pair of processing-step modules with a single processing-step module. (Hence the possible merges are determined by the tree of control modules.)
- \* In some processing modes, a given interstep buffer need only be a "strip" buffer large enough to accommodate the desired data chunk sizes. In other modes, a full-image buffer is needed and several passes are required. The control module determines which kind of buffer is used and manipulates virtual array buffers as needed. One or both processing steps may be unaware of the multi-pass behavior.

In theory, we might be able to make all of the data buffer controllers interchangeable and provide just one set of implementations for all. In practice, each one contains considerable special-case processing for its particular job. The buffer controller concept should be regarded as an overall system structuring principle, not as a complete description of the task performed by any one controller.

\*\*\* Compression object structure \*\*\*

Here is a sketch of the logical structure of the JPEG compression library:



|-- Coefficient controller --|  
|-- Entropy encoding

This sketch also describes the flow of control (subroutine calls) during typical image data processing. Each of the components shown in the diagram is an "object" which may have several different implementations available. One or more source code files contain the actual implementation(s) of each object.

The objects shown above are:

- \* Main controller: buffer controller for the subsampled-data buffer, which holds the preprocessed input data. This controller invokes preprocessing to fill the subsampled-data buffer, and JPEG compression to empty it. There is usually no need for a full-image buffer here; a strip buffer is adequate.
- \* Preprocessing controller: buffer controller for the downsampling input data buffer, which lies between colorspace conversion and downsampling. Note that a unified conversion/downsampling module would probably replace this controller entirely.
- \* Colorspace conversion: converts application image data into the desired JPEG color space; also changes the data from pixel-interleaved layout to separate component planes. Processes one pixel row at a time.
- \* Downsampling: performs reduction of chroma components as required. Optionally may perform pixel-level smoothing as well. Processes a "row group" at a time, where a row group is defined as  $V_{max}$  pixel rows of each component before downsampling, and  $V_k$  sample rows afterwards (remember  $V_k$  differs across components). Some downsampling or smoothing algorithms may require context rows above and below the current row group; the preprocessing controller is responsible for supplying these rows via proper buffering. The downsampler is responsible for edge expansion at the right edge (i.e., extending each sample row to a multiple of `block_size` samples); but the preprocessing controller is responsible for vertical edge expansion (i.e., duplicating the bottom sample row as needed to make a multiple of `block_size` rows).
- \* Coefficient controller: buffer controller for the DCT-coefficient data. This controller handles MCU assembly, including insertion of dummy DCT blocks when needed at the right or bottom edge. When performing Huffman-code optimization or emitting a multiscan JPEG file, this controller is responsible for buffering the full image. The equivalent of one fully interleaved MCU row of subsampled data is processed per call, even when the JPEG file is noninterleaved.
- \* Forward DCT and quantization: Perform DCT, quantize, and emit coefficients. Works on one or more DCT blocks at a time. (Note: the coefficients are now emitted in normal array order, which the entropy encoder is expected to

convert to zigzag order as necessary. Prior versions of the IJG code did the conversion to zigzag order within the quantization step.)

\* Entropy encoding: Perform Huffman or arithmetic entropy coding and emit the coded data to the data destination module. Works on one MCU per call. For progressive JPEG, the same DCT blocks are fed to the entropy coder during each pass, and the coder must emit the appropriate subset of coefficients.

In addition to the above objects, the compression library includes these objects:

\* Master control: determines the number of passes required, controls overall and per-pass initialization of the other modules.

\* Marker writing: generates JPEG markers (except for RSTn, which is emitted by the entropy encoder when needed).

\* Data destination manager: writes the output JPEG datastream to its final destination (e.g., a file). The destination manager supplied with the library knows how to write to a stdio stream or to a memory buffer; for other behaviors, the surrounding application may provide its own destination manager.

\* Memory manager: allocates and releases memory, controls virtual arrays (with backing store management, where required).

\* Error handler: performs formatting and output of error and trace messages; determines handling of nonfatal errors. The surrounding application may override some or all of this object's methods to change error handling.

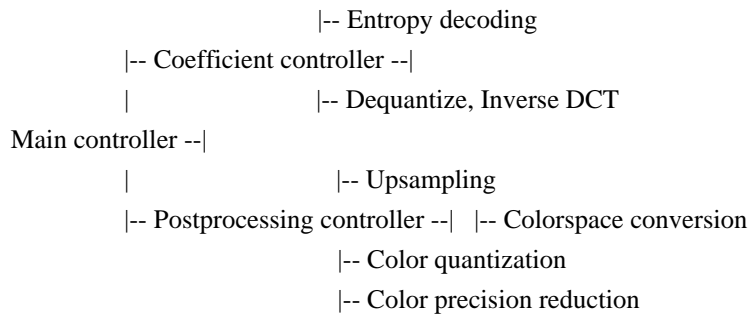
\* Progress monitor: supports output of "percent-done" progress reports. This object represents an optional callback to the surrounding application: if wanted, it must be supplied by the application.

The error handler, destination manager, and progress monitor objects are defined as separate objects in order to simplify application-specific customization of the JPEG library. A surrounding application may override individual methods or supply its own all-new implementation of one of these objects. The object interfaces for these objects are therefore treated as part of the application interface of the library, whereas the other objects are internal to the library.

The error handler and memory manager are shared by JPEG compression and decompression; the progress monitor, if used, may be shared as well.

\*\*\* Decompression object structure \*\*\*

Here is a sketch of the logical structure of the JPEG decompression library:



As before, this diagram also represents typical control flow. The objects shown are:

\* Main controller: buffer controller for the subsampled-data buffer, which holds the output of JPEG decompression proper. This controller's primary task is to feed the postprocessing procedure. Some upsampling algorithms may require context rows above and below the current row group; when this is true, the main controller is responsible for managing its buffer so as to make context rows available. In the current design, the main buffer is always a strip buffer; a full-image buffer is never required.

\* Coefficient controller: buffer controller for the DCT-coefficient data. This controller handles MCU disassembly, including deletion of any dummy DCT blocks at the right or bottom edge. When reading a multiscan JPEG file, this controller is responsible for buffering the full image. (Buffering DCT coefficients, rather than samples, is necessary to support progressive JPEG.) The equivalent of one fully interleaved MCU row of subsampled data is processed per call, even when the source JPEG file is noninterleaved.

\* Entropy decoding: Read coded data from the data source module and perform Huffman or arithmetic entropy decoding. Works on one MCU per call. For progressive JPEG decoding, the coefficient controller supplies the prior coefficients of each MCU (initially all zeroes), which the entropy decoder modifies in each scan.

\* Dequantization and inverse DCT: like it says. Note that the coefficients buffered by the coefficient controller have NOT been dequantized; we merge dequantization and inverse DCT into a single step for speed reasons. When scaled-down output is asked for, simplified DCT algorithms may be used that need fewer coefficients and emit fewer samples per DCT block, not the full 8x8. Works on one DCT block at a time.

\* Postprocessing controller: buffer controller for the color quantization input buffer, when quantization is in use. (Without quantization, this controller just calls the upsampler.) For two-pass quantization, this

controller is responsible for buffering the full-image data.

- \* Upsampling: restores chroma components to full size. (May support more general output rescaling, too. Note that if undersized DCT outputs have been emitted by the DCT module, this module must adjust so that properly sized outputs are created.) Works on one row group at a time. This module also calls the color conversion module, so its top level is effectively a buffer controller for the upsampling->color conversion buffer. However, in all but the highest-quality operating modes, upsampling and color conversion are likely to be merged into a single step.
- \* Colorspace conversion: convert from JPEG color space to output color space, and change data layout from separate component planes to pixel-interleaved. Works on one pixel row at a time.
- \* Color quantization: reduce the data to colormapped form, using either an externally specified colormap or an internally generated one. This module is not used for full-color output. Works on one pixel row at a time; may require two passes to generate a color map. Note that the output will always be a single component representing colormap indexes. In the current design, the output values are JSAMPLEs, so an 8-bit compilation cannot quantize to more than 256 colors. This is unlikely to be a problem in practice.
- \* Color reduction: this module handles color precision reduction, e.g., generating 15-bit color (5 bits/primary) from JPEG's 24-bit output. Not quite clear yet how this should be handled... should we merge it with colorspace conversion???

Note that some high-speed operating modes might condense the entire postprocessing sequence to a single module (upsample, color convert, and quantize in one step).

In addition to the above objects, the decompression library includes these objects:

- \* Master control: determines the number of passes required, controls overall and per-pass initialization of the other modules. This is subdivided into input and output control: `jdinput.c` controls only input-side processing, while `jdmaster.c` handles overall initialization and output-side control.
- \* Marker reading: decodes JPEG markers (except for RSTn).
- \* Data source manager: supplies the input JPEG datastream. The source manager supplied with the library knows how to read from a `stdio` stream or from a memory buffer; for other behaviors, the surrounding application may provide its own source manager.

\* Memory manager: same as for compression library.

\* Error handler: same as for compression library.

\* Progress monitor: same as for compression library.

As with compression, the data source manager, error handler, and progress monitor are candidates for replacement by a surrounding application.

\*\*\* Decompression input and output separation \*\*\*

To support efficient incremental display of progressive JPEG files, the decompressor is divided into two sections that can run independently:

1. Data input includes marker parsing, entropy decoding, and input into the coefficient controller's DCT coefficient buffer. Note that this processing is relatively cheap and fast.
2. Data output reads from the DCT coefficient buffer and performs the IDCT and all postprocessing steps.

For a progressive JPEG file, the data input processing is allowed to get arbitrarily far ahead of the data output processing. (This occurs only if the application calls `jpeg_consume_input()`; otherwise input and output run in lockstep, since the input section is called only when the output section needs more data.) In this way the application can avoid making extra display passes when data is arriving faster than the display pass can run. Furthermore, it is possible to abort an output pass without losing anything, since the coefficient buffer is read-only as far as the output section is concerned. See `libjpeg.txt` for more detail.

A full-image coefficient array is only created if the JPEG file has multiple scans (or if the application specifies buffered-image mode anyway). When reading a single-scan file, the coefficient controller normally creates only a one-MCU buffer, so input and output processing must run in lockstep in this case. `jpeg_consume_input()` is effectively a no-op in this situation.

The main impact of dividing the decompressor in this fashion is that we must be very careful with shared variables in the `cinfo` data structure. Each variable that can change during the course of decompression must be classified as belonging to data input or data output, and each section must look only at its own variables. For example, the data output section may not depend on any of the variables that describe the current scan in the JPEG file, because these may change as the data input section advances into a new scan.

The progress monitor is (somewhat arbitrarily) defined to treat input of the

file as one pass when buffered-image mode is not used, and to ignore data input work completely when buffered-image mode is used. Note that the library has no reliable way to predict the number of passes when dealing with a progressive JPEG file, nor can it predict the number of output passes in buffered-image mode. So the work estimate is inherently bogus anyway.

No comparable division is currently made in the compression library, because there isn't any real need for it.

\*\*\* Data formats \*\*\*

Arrays of pixel sample values use the following data structure:

```
typedef something JSAMPLE; a pixel component value, 0..MAXJSAMPLE
typedef JSAMPLE *JSAMPROW; ptr to a row of samples
typedef JSAMPROW *JSAMPARRAY; ptr to a list of rows
typedef JSAMPARRAY *JSAMPIMAGE; ptr to a list of color-component arrays
```

The basic element type JSAMPLE will typically be one of unsigned char, (signed) char, or short. Short will be used if samples wider than 8 bits are to be supported (this is a compile-time option). Otherwise, unsigned char is used if possible. If the compiler only supports signed chars, then it is necessary to mask off the value when reading. Thus, all reads of JSAMPLE values must be coded as "GETJSAMPLE(value)", where the macro will be defined as "((value) & 0xFF)" on signed-char machines and "((int) (value))" elsewhere.

With these conventions, JSAMPLE values can be assumed to be  $\geq 0$ . This helps simplify correct rounding during downsampling, etc. The JPEG standard's specification that sample values run from -128..127 is accommodated by subtracting 128 from the sample value in the DCT step. Similarly, during decompression the output of the IDCT step will be immediately shifted back to 0..255. (NB: different values are required when 12-bit samples are in use. The code is written in terms of MAXJSAMPLE and CENTERJSAMPLE, which will be defined as 255 and 128 respectively in an 8-bit implementation, and as 4095 and 2048 in a 12-bit implementation.)

We use a pointer per row, rather than a two-dimensional JSAMPLE array. This choice costs only a small amount of memory and has several benefits:

- \* Code using the data structure doesn't need to know the allocated width of the rows. This simplifies edge expansion/compression, since we can work in an array that's wider than the logical picture width.
- \* Indexing doesn't require multiplication; this is a performance win on many machines.
- \* Arrays with more than 64K total elements can be supported even on machines where malloc() cannot allocate chunks larger than 64K.
- \* The rows forming a component array may be allocated at different times without extra copying. This trick allows some speedups in smoothing steps



that need access to the previous and next rows.

Note that each color component is stored in a separate array; we don't use the traditional layout in which the components of a pixel are stored together. This simplifies coding of modules that work on each component independently, because they don't need to know how many components there are. Furthermore, we can read or write each component to a temporary file independently, which is helpful when dealing with noninterleaved JPEG files.

In general, a specific sample value is accessed by code such as

```
GETJSAMPLE(image[colorcomponent][row][col])
```

where col is measured from the image left edge, but row is measured from the first sample row currently in memory. Either of the first two indexings can be precomputed by copying the relevant pointer.

Since most image-processing applications prefer to work on images in which the components of a pixel are stored together, the data passed to or from the surrounding application uses the traditional convention: a single pixel is represented by N consecutive JSAMPLE values, and an image row is an array of (# of color components)\*(image width) JSAMPLEs. One or more rows of data can be represented by a pointer of type JSAMPARRAY in this scheme. This scheme is converted to component-wise storage inside the JPEG library. (Applications that want to skip JPEG preprocessing or postprocessing will have to contend with component-wise storage.)

Arrays of DCT-coefficient values use the following data structure:

```
typedef short JCOEF; a 16-bit signed integer
typedef JCOEF JBLOCK[DCTSIZE2]; an 8x8 block of coefficients
typedef JBLOCK *JBLOCKROW; ptr to one horizontal row of 8x8 blocks
typedef JBLOCKROW *JBLOCKARRAY; ptr to a list of such rows
typedef JBLOCKARRAY *JBLOCKIMAGE; ptr to a list of color component arrays
```

The underlying type is at least a 16-bit signed integer; while "short" is big enough on all machines of interest, on some machines it is preferable to use "int" for speed reasons, despite the storage cost. Coefficients are grouped into 8x8 blocks (but we always use #defines DCTSIZE and DCTSIZE2 rather than "8" and "64").

The contents of a coefficient block may be in either "natural" or zigzagged order, and may be true values or divided by the quantization coefficients, depending on where the block is in the processing pipeline. In the current library, coefficient blocks are kept in natural order everywhere; the entropy codecs zigzag or dezigzag the data as it is written or read. The blocks contain quantized coefficients everywhere outside the DCT/IDCT subsystems. (This latter decision may need to be revisited to support variable

quantization a la JPEG Part 3.)

Notice that the allocation unit is now a row of 8x8 coefficient blocks, corresponding to block\_size rows of samples. Otherwise the structure is much the same as for samples, and for the same reasons.

On machines where malloc() can't handle a request bigger than 64Kb, this data structure limits us to rows of less than 512 JBLOCKSs, or a picture width of 4000+ pixels. This seems an acceptable restriction.

On 80x86 machines, the bottom-level pointer types (JSAMPROW and JBLOCKROW) must be declared as "far" pointers, but the upper levels can be "near" (implying that the pointer lists are allocated in the DS segment).

We use a #define symbol FAR, which expands to the "far" keyword when compiling on 80x86 machines and to nothing elsewhere.

\*\*\* Suspendable processing \*\*\*

In some applications it is desirable to use the JPEG library as an incremental, memory-to-memory filter. In this situation the data source or destination may be a limited-size buffer, and we can't rely on being able to empty or refill the buffer at arbitrary times. Instead the application would like to have control return from the library at buffer overflow/underrun, and then resume compression or decompression at a later time.

This scenario is supported for simple cases. (For anything more complex, we recommend that the application "bite the bullet" and develop real multitasking capability.) The libjpeg.txt file goes into more detail about the usage and limitations of this capability; here we address the implications for library structure.

The essence of the problem is that the entropy codec (coder or decoder) must be prepared to stop at arbitrary times. In turn, the controllers that call the entropy codec must be able to stop before having produced or consumed all the data that they normally would handle in one call. That part is reasonably straightforward: we make the controller call interfaces include "progress counters" which indicate the number of data chunks successfully processed, and we require callers to test the counter rather than just assume all of the data was processed.

Rather than trying to restart at an arbitrary point, the current Huffman codecs are designed to restart at the beginning of the current MCU after a suspension due to buffer overflow/underrun. At the start of each call, the codec's internal state is loaded from permanent storage (in the JPEG object structures) into local variables. On successful completion of the MCU, the permanent state is updated. (This copying is not very expensive, and may even

lead to \*improved\* performance if the local variables can be registerized.) If a suspension occurs, the codec simply returns without updating the state, thus effectively reverting to the start of the MCU. Note that this implies leaving some data unprocessed in the source/destination buffer (ie, the compressed partial MCU). The data source/destination module interfaces are specified so as to make this possible. This also implies that the data buffer must be large enough to hold a worst-case compressed MCU; a couple thousand bytes should be enough.

In a successive-approximation AC refinement scan, the progressive Huffman decoder has to be able to undo assignments of newly nonzero coefficients if it suspends before the MCU is complete, since decoding requires distinguishing previously-zero and previously-nonzero coefficients. This is a bit tedious but probably won't have much effect on performance. Other variants of Huffman decoding need not worry about this, since they will just store the same values again if forced to repeat the MCU.

This approach would probably not work for an arithmetic codec, since its modifiable state is quite large and couldn't be copied cheaply. Instead it would have to suspend and resume exactly at the point of the buffer end.

The JPEG marker reader is designed to cope with suspension at an arbitrary point. It does so by backing up to the start of the marker parameter segment, so the data buffer must be big enough to hold the largest marker of interest. Again, a couple KB should be adequate. (A special "skip" convention is used to bypass COM and APPn markers, so these can be larger than the buffer size without causing problems; otherwise a 64K buffer would be needed in the worst case.)

The JPEG marker writer currently does \*not\* cope with suspension. We feel that this is not necessary; it is much easier simply to require the application to ensure there is enough buffer space before starting. (An empty 2K buffer is more than sufficient for the header markers; and ensuring there are a dozen or two bytes available before calling `jpeg_finish_compress()` will suffice for the trailer.) This would not work for writing multi-scan JPEG files, but we simply do not intend to support that capability with suspension.

### \*\*\* Memory manager services \*\*\*

The JPEG library's memory manager controls allocation and deallocation of memory, and it manages large "virtual" data arrays on machines where the operating system does not provide virtual memory. Note that the same memory manager serves both compression and decompression operations.

In all cases, allocated objects are tied to a particular compression or decompression master record, and they will be released when that master

record is destroyed.

The memory manager does not provide explicit deallocation of objects. Instead, objects are created in "pools" of free storage, and a whole pool can be freed at once. This approach helps prevent storage-leak bugs, and it speeds up operations whenever malloc/free are slow (as they often are). The pools can be regarded as lifetime identifiers for objects. Two pools/lifetimes are defined:

- \* JPOOL\_PERMANENT lasts until master record is destroyed
- \* JPOOL\_IMAGE lasts until done with image (JPEG datastream)

Permanent lifetime is used for parameters and tables that should be carried across from one datastream to another; this includes all application-visible parameters. Image lifetime is used for everything else. (A third lifetime, JPOOL\_PASS = one processing pass, was originally planned. However it was dropped as not being worthwhile. The actual usage patterns are such that the peak memory usage would be about the same anyway; and having per-pass storage substantially complicates the virtual memory allocation rules --- see below.)

The memory manager deals with three kinds of object:

1. "Small" objects. Typically these require no more than 10K-20K total.
2. "Large" objects. These may require tens to hundreds of K depending on image size. Semantically they behave the same as small objects, but we distinguish them for two reasons:
  - \* On MS-DOS machines, large objects are referenced by FAR pointers, small objects by NEAR pointers.
  - \* Pool allocation heuristics may differ for large and small objects.Note that individual "large" objects cannot exceed the size allowed by type size\_t, which may be 64K or less on some machines.
3. "Virtual" objects. These are large 2-D arrays of JSAMPLEs or JBLOCKs (typically large enough for the entire image being processed). The memory manager provides stripwise access to these arrays. On machines without virtual memory, the rest of the array may be swapped out to a temporary file.

(Note: JSAMPARRAY and JBLOCKARRAY data structures are a combination of large objects for the data proper and small objects for the row pointers. For convenience and speed, the memory manager provides single routines to create these structures. Similarly, virtual arrays include a small control block and a JSAMPARRAY or JBLOCKARRAY working buffer, all created with one call.)

In the present implementation, virtual arrays are only permitted to have image lifespan. (Permanent lifespan would not be reasonable, and pass lifespan is not very useful since a virtual array's raison d'etre is to store data for multiple passes through the image.) We also expect that only "small" objects will be given permanent lifespan, though this restriction is not required by the memory manager.

In a non-virtual-memory machine, some performance benefit can be gained by

making the in-memory buffers for virtual arrays be as large as possible. (For small images, the buffers might fit entirely in memory, so blind swapping would be very wasteful.) The memory manager will adjust the height of the buffers to fit within a prespecified maximum memory usage. In order to do this in a reasonably optimal fashion, the manager needs to allocate all of the virtual arrays at once. Therefore, there isn't a one-step allocation routine for virtual arrays; instead, there is a "request" routine that simply allocates the control block, and a "realize" routine (called just once) that determines space allocation and creates all of the actual buffers. The realize routine must allow for space occupied by non-virtual large objects. (We don't bother to factor in the space needed for small objects, on the grounds that it isn't worth the trouble.)

To support all this, we establish the following protocol for doing business with the memory manager:

1. Modules must request virtual arrays (which may have only image lifespan) during the initial setup phase, i.e., in their `jinit_XXX` routines.
  2. All "large" objects (including JSAMPARRAYs and JBLOCKARRAYs) must also be allocated during initial setup.
  3. `realize_virt_arrays` will be called at the completion of initial setup.
- The above conventions ensure that sufficient information is available for it to choose a good size for virtual array buffers.

Small objects of any lifespan may be allocated at any time. We expect that the total space used for small objects will be small enough to be negligible in the `realize_virt_arrays` computation.

In a virtual-memory machine, we simply pretend that the available space is infinite, thus causing `realize_virt_arrays` to decide that it can allocate all the virtual arrays as full-size in-memory buffers. The overhead of the virtual-array access protocol is very small when no swapping occurs.

A virtual array can be specified to be "pre-zeroed"; when this flag is set, never-yet-written sections of the array are set to zero before being made available to the caller. If this flag is not set, never-written sections of the array contain garbage. (This feature exists primarily because the equivalent logic would otherwise be needed in `jdcoefct.c` for progressive JPEG mode; we may as well make it available for possible other uses.)

The first write pass on a virtual array is required to occur in top-to-bottom order; read passes, as well as any write passes after the first one, may access the array in any order. This restriction exists partly to simplify the virtual array control logic, and partly because some file systems may not support seeking beyond the current end-of-file in a temporary file. The main implication of this restriction is that rearrangement of rows (such as converting top-to-bottom data order to bottom-to-top) must be handled while reading data out of the virtual array, not while putting it in.

\*\*\* Memory manager internal structure \*\*\*

To isolate system dependencies as much as possible, we have broken the memory manager into two parts. There is a reasonably system-independent "front end" (jmemmgr.c) and a "back end" that contains only the code likely to change across systems. All of the memory management methods outlined above are implemented by the front end. The back end provides the following routines for use by the front end (none of these routines are known to the rest of the JPEG code):

jpeg\_mem\_init, jpeg\_mem\_term system-dependent initialization/shutdown

jpeg\_get\_small, jpeg\_free\_small interface to malloc and free library routines  
(or their equivalents)

jpeg\_get\_large, jpeg\_free\_large interface to FAR malloc/free in MSDOS machines;  
else usually the same as  
jpeg\_get\_small/jpeg\_free\_small

jpeg\_mem\_available estimate available memory

jpeg\_open\_backing\_store create a backing-store object

read\_backing\_store, manipulate a backing-store object  
write\_backing\_store,  
close\_backing\_store

On some systems there will be more than one type of backing-store object (specifically, in MS-DOS a backing store file might be an area of extended memory as well as a disk file). jpeg\_open\_backing\_store is responsible for choosing how to implement a given object. The read/write/close routines are method pointers in the structure that describes a given object; this lets them be different for different object types.

It may be necessary to ensure that backing store objects are explicitly released upon abnormal program termination. For example, MS-DOS won't free extended memory by itself. To support this, we will expect the main program or surrounding application to arrange to call self\_destruct (typically via jpeg\_destroy) upon abnormal termination. This may require a SIGINT signal handler or equivalent. We don't want to have the back end module install its own signal handler, because that would pre-empt the surrounding application's ability to control signal handling.

The IJG distribution includes several memory manager back end implementations. Usually the same back end should be suitable for all applications on a given system, but it is possible for an application to supply its own back end at need.

\*\*\* Implications of DNL marker \*\*\*

Some JPEG files may use a DNL marker to postpone definition of the image height (this would be useful for a fax-like scanner's output, for instance). In these files the SOF marker claims the image height is 0, and you only find out the true image height at the end of the first scan.

We could read these files as follows:

1. Upon seeing zero image height, replace it by 65535 (the maximum allowed).
2. When the DNL is found, update the image height in the global image descriptor.

This implies that control modules must avoid making copies of the image height, and must re-test for termination after each MCU row. This would be easy enough to do.

In cases where image-size data structures are allocated, this approach will result in very inefficient use of virtual memory or much-larger-than-necessary temporary files. This seems acceptable for something that probably won't be a mainstream usage. People might have to forgo use of memory-hogging options (such as two-pass color quantization or noninterleaved JPEG files) if they want efficient conversion of such files. (One could improve efficiency by demanding a user-supplied upper bound for the height, less than 65536; in most cases it could be much less.)

The standard also permits the SOF marker to overestimate the image height, with a DNL to give the true, smaller height at the end of the first scan. This would solve the space problems if the overestimate wasn't too great. However, it implies that you don't even know whether DNL will be used.

This leads to a couple of very serious objections:

1. Testing for a DNL marker must occur in the inner loop of the decompressor's Huffman decoder; this implies a speed penalty whether the feature is used or not.
2. There is no way to hide the last-minute change in image height from an application using the decoder. Thus *every* application using the IJG library would suffer a complexity penalty whether it cared about DNL or not.

We currently do not support DNL because of these problems.

A different approach is to insist that DNL-using files be preprocessed by a separate program that reads ahead to the DNL, then goes back and fixes the SOF marker. This is a much simpler solution and is probably far more efficient. Even if one wants piped input, buffering the first scan of the JPEG file needs a lot smaller temp file than is implied by the maximum-height method. For this approach we'd simply treat DNL as a no-op in the decompressor (at most, check that it matches the SOF image height).

We will not worry about making the compressor capable of outputting DNL. Something similar to the first scheme above could be applied if anyone ever wants to make that work.

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/structure.txt

No license file was found, but licenses were detected in source scan.

/\*

\* jutils.c

\*

\* Copyright (C) 1991-1996, Thomas G. Lane.

\* Modified 2009-2020 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains tables and miscellaneous utility routines needed

\* for both compression and decompression.

\* Note we prefix all global names with "j" to minimize conflicts with

\* a surrounding application.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jutils.c

No license file was found, but licenses were detected in source scan.

/\*

\* jcapimin.c

\*

\* Copyright (C) 1994-1998, Thomas G. Lane.

\* Modified 2003-2010 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains application interface code for the compression half

\* of the JPEG library. These are the "minimum" API routines that may be

\* needed in either the normal full-compression case or the transcoding-only

\* case.

\*

\* Most of the routines intended to be called directly by an application

\* are in this file or in jcapistd.c. But also see jcparam.c for

\* parameter-setup helper routines, jcomapi.c for routines shared by

\* compression and decompression, and jctrans.c for the transcoding case.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jcapimin.c



No license file was found, but licenses were detected in source scan.

```
/*
 * wrtarga.c
 *
 * Copyright (C) 1991-1996, Thomas G. Lane.
 * Modified 2015-2019 by Guido Vollbeding.
 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file contains routines to write output images in Targa format.
 *
 * These routines may need modification for non-Unix environments or
 * specialized applications. As they stand, they assume output to
 * an ordinary stdio stream.
 *
 * Based on code contributed by Lee Daniel Crocker.
 */
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/wrtarga.c
No license file was found, but licenses were detected in source scan.
```

```
/*
 * jcdctmgr.c
 *
 * Copyright (C) 1994-1996, Thomas G. Lane.
 * Modified 2003-2020 by Guido Vollbeding.
 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file contains the forward-DCT management logic.
 * This code selects a particular DCT implementation to be used,
 * and it performs related housekeeping chores including coefficient
 * quantization.
 */
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jcdctmgr.c
No license file was found, but licenses were detected in source scan.
```

```
/*
 * jcsample.c
 *
 * Copyright (C) 1991-1996, Thomas G. Lane.
 * Modified 2003-2020 by Guido Vollbeding.
 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
```

```

*
* This file contains downsampling routines.
*
* Downsampling input data is counted in "row groups". A row group
* is defined to be max_v_samp_factor pixel rows of each component,
* from which the downsampler produces v_samp_factor sample rows.
* A single row group is processed in each call to the downsampler module.
*
* The downsampler is responsible for edge-expansion of its output data
* to fill an integral number of DCT blocks horizontally. The source buffer
* may be modified if it is helpful for this purpose (the source buffer is
* allocated wide enough to correspond to the desired output width).
* The caller (the prep controller) is responsible for vertical padding.
*
* The downsampler may request "context rows" by setting need_context_rows
* during startup. In this case, the input arrays will contain at least
* one row group's worth of pixels above and below the passed-in data;
* the caller will create dummy rows at image top and bottom by replicating
* the first or last real pixel row.
*
* An excellent reference for image resampling is
* Digital Image Warping, George Wolberg, 1990.
* Pub. by IEEE Computer Society Press, Los Alamitos, CA. ISBN 0-8186-8944-7.
*
* The downsampling algorithm used here is a simple average of the source
* pixels covered by the output pixel. The hi-falutin sampling literature
* refers to this as a "box filter". In general the characteristics of a box
* filter are not very good, but for the specific cases we normally use (1:1
* and 2:1 ratios) the box is equivalent to a "triangle filter" which is not
* nearly so bad. If you intend to use other sampling ratios, you'd be well
* advised to improve this code.
*
* A simple input-smoothing capability is provided. This is mainly intended
* for cleaning up color-dithered GIF input files (if you find it inadequate,
* we suggest using an external filtering program such as pnmconvol). When
* enabled, each input pixel P is replaced by a weighted sum of itself and its
* eight neighbors. P's weight is 1-8*SF and each neighbor's weight is SF,
* where SF = (smoothing_factor / 1024).
* Currently, smoothing is only supported for 2h2v sampling factors.
*/

```

Found in path(s):

```

* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jcsample.c

```

No license file was found, but licenses were detected in source scan.

```

/*
* jdct.h
*

```

\* Copyright (C) 1994-1996, Thomas G. Lane.  
\* Modified 2002-2019 by Guido Vollbeding.  
\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This include file contains common declarations for the forward and  
\* inverse DCT modules. These declarations are private to the DCT managers  
\* (jcdctmgr.c, jddctmgr.c) and the individual DCT algorithms.  
\* The individual DCT algorithms are kept in separate files to ease  
\* machine-dependent tuning (e.g., assembly coding).  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdct.h  
No license file was found, but licenses were detected in source scan.

/\*  
\* wrtle.c  
\*  
\* Copyright (C) 1991-1996, Thomas G. Lane.  
\* Modified 2017-2019 by Guido Vollbeding.  
\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file contains routines to write output images in RLE format.  
\* The Utah Raster Toolkit library is required (version 3.1 or later).  
\*  
\* These routines may need modification for non-Unix environments or  
\* specialized applications. As they stand, they assume output to  
\* an ordinary stdio stream.  
\*  
\* Based on code contributed by Mike Lijewski,  
\* with updates from Robert Hutchinson.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/wrtle.c  
No license file was found, but licenses were detected in source scan.

/\*  
\* jidctfst.c  
\*  
\* Copyright (C) 1994-1998, Thomas G. Lane.  
\* Modified 2015-2017 by Guido Vollbeding.  
\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file contains a fast, not so accurate integer implementation of the

```

* inverse DCT (Discrete Cosine Transform). In the IJG code, this routine
* must also perform dequantization of the input coefficients.
*
* A 2-D IDCT can be done by 1-D IDCT on each column followed by 1-D IDCT
* on each row (or vice versa, but it's more convenient to emit a row at
* a time). Direct algorithms are also available, but they are much more
* complex and seem not to be any faster when reduced to code.
*
* This implementation is based on Arai, Agui, and Nakajima's algorithm for
* scaled DCT. Their original paper (Trans. IEICE E-71(11):1095) is in
* Japanese, but the algorithm is described in the Pennebaker & Mitchell
* JPEG textbook (see REFERENCES section in file README). The following code
* is based directly on figure 4-8 in P&M.
*
* While an 8-point DCT cannot be done in less than 11 multiplies, it is
* possible to arrange the computation so that many of the multiplies are
* simple scalings of the final outputs. These multiplies can then be
* folded into the multiplications or divisions by the JPEG quantization
* table entries. The AA&N method leaves only 5 multiplies and 29 adds
* to be done in the DCT itself.
*
* The primary disadvantage of this method is that with fixed-point math,
* accuracy is lost due to imprecise representation of the scaled
* quantization values. The smaller the quantization table entry, the less
* precise the scaled value, so this implementation does worse with high-
* quality-setting files than with low-quality ones.
*/

```

Found in path(s):

```

* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jidctfst.c

```

No license file was found, but licenses were detected in source scan.

```

/*

```

```

* wrgif.c

```

```

*

```

```

* Copyright (C) 1991-1996, Thomas G. Lane.

```

```

* Modified 2015-2019 by Guido Vollbeding.

```

```

* This file is part of the Independent JPEG Group's software.

```

```

* For conditions of distribution and use, see the accompanying README file.

```

```

*

```

```

* This file contains routines to write output images in GIF format.

```

```

*

```

```

* These routines may need modification for non-Unix environments or

```

```

* specialized applications. As they stand, they assume output to

```

```

* an ordinary stdio stream.

```

```

*/

```

```

/*

```

```

* This code is loosely based on ppmtogif from the PBMPLUS distribution

```

```

* of Feb. 1991. That file contains the following copyright notice:

```

```

*   Based on GIFENCOD by David Rowley <mgardi@watdscu.waterloo.edu>.

```

\* Lempel-Ziv compression based on "compress" by Spencer W. Thomas et al.  
\* Copyright (C) 1989 by Jef Poskanzer.  
\* Permission to use, copy, modify, and distribute this software and its  
\* documentation for any purpose and without fee is hereby granted, provided  
\* that the above copyright notice appear in all copies and that both that  
\* copyright notice and this permission notice appear in supporting  
\* documentation. This software is provided "as is" without express or  
\* implied warranty.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/wrgif.c  
No license file was found, but licenses were detected in source scan.

/\*

\* jmemmac.c

\*

\* Copyright (C) 1992-1997, Thomas G. Lane.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* jmemmac.c provides an Apple Macintosh implementation of the system-

\* dependent portion of the JPEG memory manager.

\*

\* If you use jmemmac.c, then you must define USE\_MAC\_MEMMGR in the

\* JPEG\_INTERNALS part of jconfig.h.

\*

\* jmemmac.c uses the Macintosh toolbox routines NewPtr and DisposePtr

\* instead of malloc and free. It accurately determines the amount of

\* memory available by using CompactMem. Notice that if left to its

\* own devices, this code can chew up all available space in the

\* application's zone, with the exception of the rather small "slop"

\* factor computed in jpeg\_mem\_available(). The application can ensure

\* that more space is left over by reducing max\_memory\_to\_use.

\*

\* Large images are swapped to disk using temporary files and System 7.0+'s

\* temporary folder functionality.

\*

\* Note that jmemmac.c depends on two features of MacOS that were first

\* introduced in System 7: FindFolder and the FSSpec-based calls.

\* If your application uses jmemmac.c and is run under System 6 or earlier,

\* and the jpeg library decides it needs a temporary file, it will abort,

\* printing error messages about requiring System 7. (If no temporary files

\* are created, it will run fine.)

\*

\* If you want to use jmemmac.c in an application that might be used with

\* System 6 or earlier, then you should remove dependencies on FindFolder

\* and the FSSpec calls. You will need to replace FindFolder with some

- \* other mechanism for finding a place to put temporary files, and you
- \* should replace the FSSpec calls with their HFS equivalents:
- \*
- \* FSpDelete -> HDelete
- \* FSpGetFInfo -> HGetFInfo
- \* FSpCreate -> HCreate
- \* FSpOpenDF -> HOpen \*\*\* Note: not HOpenDF \*\*\*
- \* FSMakeFSSpec -> (fill in spec by hand.)
- \*
- \* (Use HOpen instead of HOpenDF. HOpen is just a glue-interface to PBHOpen,
- \* which is on all HFS macs. HOpenDF is a System 7 addition which avoids the
- \* ages-old problem of names starting with a period.)
- \*
- \* Contributed by Sam Bushell (jsam@iagu.on.net) and
- \* Dan Gildor (gyld@in-touch.com).
- \*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jmemmac.c

No license file was found, but licenses were detected in source scan.

/\*

\* jcmaster.c

\*

\* Copyright (C) 1991-1997, Thomas G. Lane.

\* Modified 2003-2020 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains master control logic for the JPEG compressor.

\* These routines are concerned with parameter validation, initial setup,

\* and inter-pass control (determining the number of passes and the work

\* to be done in each pass).

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jcmaster.c

No license file was found, but licenses were detected in source scan.

/\*

\* jdatadst.c

\*

\* Copyright (C) 1994-1996, Thomas G. Lane.

\* Modified 2009-2019 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains compression data destination routines for the case of

\* emitting JPEG data to memory or to a file (or any stdio stream).  
\* While these routines are sufficient for most applications,  
\* some will want to use a different destination manager.  
\* IMPORTANT: we assume that fwrite() will correctly transcribe an array of  
\* JOCTETs into 8-bit-wide elements on external storage. If char is wider  
\* than 8 bits on your machine, you may need to do some tweaking.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdatadst.c

No license file was found, but licenses were detected in source scan.

/\*

\* ckconfig.c

\*

\* Copyright (C) 1991-1994, Thomas G. Lane.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/ckconfig.c

No license file was found, but licenses were detected in source scan.

/\*

\* jcmainct.c

\*

\* Copyright (C) 1994-1996, Thomas G. Lane.

\* Modified 2003-2012 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains the main buffer controller for compression.

\* The main buffer lies between the pre-processor and the JPEG

\* compressor proper; it holds downsampled data in the JPEG colorspace.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jcmainct.c

No license file was found, but licenses were detected in source scan.

/\*

\* rdjpgcom.c

\*

\* Copyright (C) 1994-1997, Thomas G. Lane.

\* Modified 2009 by Bill Allombert, Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*  
\* This file contains a very simple stand-alone application that displays  
\* the text in COM (comment) markers in a JFIF file.  
\* This may be useful as an example of the minimum logic needed to parse  
\* JPEG markers.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/rdjpgcom.c  
No license file was found, but licenses were detected in source scan.

/\*

\* jdmerge.c  
\*  
\* Copyright (C) 1994-1996, Thomas G. Lane.  
\* Modified 2013-2020 by Guido Vollbeding.  
\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file contains code for merged upsampling/color conversion.  
\*  
\* This file combines functions from jdsample.c and jdcolor.c;  
\* read those files first to understand what's going on.  
\*  
\* When the chroma components are to be upsampled by simple replication  
\* (ie, box filtering), we can save some work in color conversion by  
\* calculating all the output pixels corresponding to a pair of chroma  
\* samples at one time. In the conversion equations  
\*  $R = Y + K1 * Cr$   
\*  $G = Y + K2 * Cb + K3 * Cr$   
\*  $B = Y + K4 * Cb$   
\* only the Y term varies among the group of pixels corresponding to a pair  
\* of chroma samples, so the rest of the terms can be calculated just once.  
\* At typical sampling ratios, this eliminates half or three-quarters of the  
\* multiplications needed for color conversion.  
\*  
\* This file currently provides implementations for the following cases:  
\* YCC => RGB color conversion only (YCbCr or BG\_YCC).  
\* Sampling ratios of 2h1v or 2h2v.  
\* No scaling needed at upsample time.  
\* Corner-aligned (non-CCIR601) sampling alignment.  
\* Other special cases could be added, but in most applications these are  
\* the only common cases. (For uncommon cases we fall back on the more  
\* general code in jdsample.c and jdcolor.c.)  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdmerge.c



No license file was found, but licenses were detected in source scan.

```
/*
 * transupp.c
 *
 * Copyright (C) 1997-2019, Thomas G. Lane, Guido Vollbeding.
 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file contains image transformation routines and other utility code
 * used by the jpegtran sample application. These are NOT part of the core
 * JPEG library. But we keep these routines separate from jpegtran.c to
 * ease the task of maintaining jpegtran-like programs that have other user
 * interfaces.
 */
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/transupp.c
```

No license file was found, but licenses were detected in source scan.

```
/*
 * djpeg.c
 *
 * Copyright (C) 1991-1997, Thomas G. Lane.
 * Modified 2009-2019 by Guido Vollbeding.
 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file contains a command-line user interface for the JPEG decompressor.
 * It should work on any system with Unix- or MS-DOS-style command lines.
 *
 * Two different command line styles are permitted, depending on the
 * compile-time switch TWO_FILE_COMMANDLINE:
 * djpeg [options] inputfile outputfile
 * djpeg [options] [inputfile]
 * In the second style, output is always to standard output, which you'd
 * normally redirect to a file or pipe to some other program. Input is
 * either from a named file or from standard input (typically redirected).
 * The second style is convenient on Unix but is unhelpful on systems that
 * don't support pipes. Also, you MUST use the first style if your system
 * doesn't do binary I/O to stdin/stdout.
 * To simplify script writing, the "-outfile" switch is provided. The syntax
 * djpeg [options] -outfile outputfile inputfile
 * works regardless of which command line style is used.
 */
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/djpeg.c
```

No license file was found, but licenses were detected in source scan.

```
/*
 * rdgif.c
 *
 * Copyright (C) 1991-1996, Thomas G. Lane.
 * Modified 2019-2020 by Guido Vollbeding.
 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file contains routines to read input images in GIF format.
 *
 * These routines may need modification for non-Unix environments or
 * specialized applications. As they stand, they assume input from
 * an ordinary stdio stream. They further assume that reading begins
 * at the start of the file; start_input may need work if the
 * user interface has already read some data (e.g., to determine that
 * the file is indeed GIF format).
 */
/*
 * This code is loosely based on giftppm from the PBMPLUS distribution
 * of Feb. 1991. That file contains the following copyright notice:
 * +-----+
 * | Copyright 1990, David Koblas.          |
 * | Permission to use, copy, modify, and distribute this software |
 * | and its documentation for any purpose and without fee is hereby |
 * | granted, provided that the above copyright notice appear in all |
 * | copies and that both that copyright notice and this permission |
 * | notice appear in supporting documentation. This software is    |
 * | provided "as is" without express or implied warranty.          |
 * +-----+
 */
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/rdgif.c
```

No license file was found, but licenses were detected in source scan.

```
/*
 * jdinput.c
 *
 * Copyright (C) 1991-1997, Thomas G. Lane.
 * Modified 2002-2020 by Guido Vollbeding.
 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file contains input control logic for the JPEG decompressor.
 * These routines are concerned with controlling the decompressor's input
 * processing (marker reading and coefficient decoding). The actual input
```

\* reading is done in jdmarker.c, jdhuft.c, and jdarith.c.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdinput.c

No license file was found, but licenses were detected in source scan.

/\*

\* jcapistd.c

\*

\* Copyright (C) 1994-1996, Thomas G. Lane.

\* Modified 2013 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains application interface code for the compression half

\* of the JPEG library. These are the "standard" API routines that are

\* used in the normal full-compression case. They are not used by a

\* transcoding-only application. Note that if an application links in

\* jpeg\_start\_compress, it will end up linking in the entire compressor.

\* We thus must separate this file from jcapimin.c to avoid linking the

\* whole compression library into a transcoder.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jcapistd.c

No license file was found, but licenses were detected in source scan.

/\*

\* alternate djpeg.c

\*

\* Copyright (C) 1991-1997, Thomas G. Lane.

\* Modified 2009-2020 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains an alternate user interface for the JPEG decompressor.

\* One or more input files are named on the command line, and output file

\* names are created by substituting an appropriate extension.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/djpegalt.c

No license file was found, but licenses were detected in source scan.

/\*

\* wrbmp.c

\*

\* Copyright (C) 1994-1996, Thomas G. Lane.  
\* Modified 2017-2019 by Guido Vollbeding.  
\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file contains routines to write output images in Microsoft "BMP"  
\* format (MS Windows 3.x and OS/2 1.x flavors).  
\* Either 8-bit colormapped or 24-bit full-color format can be written.  
\* No compression is supported.  
\*  
\* These routines may need modification for non-Unix environments or  
\* specialized applications. As they stand, they assume output to  
\* an ordinary stdio stream.  
\*  
\* This code contributed by James Arthur Boucher.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/wrbmp.c

No license file was found, but licenses were detected in source scan.

/\*

\* jmemansi.c

\*

\* Copyright (C) 1992-1996, Thomas G. Lane.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file provides a simple generic implementation of the system-

\* dependent portion of the JPEG memory manager. This implementation

\* assumes that you have the ANSI-standard library routine tmpfile().

\* Also, the problem of determining the amount of memory available

\* is shoved onto the user.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jmemansi.c

No license file was found, but licenses were detected in source scan.

/\*

\* jdapistd.c

\*

\* Copyright (C) 1994-1996, Thomas G. Lane.

\* Modified 2002-2013 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains application interface code for the decompression half

\* of the JPEG library. These are the "standard" API routines that are  
\* used in the normal full-decompression case. They are not used by a  
\* transcoding-only application. Note that if an application links in  
\* jpeg\_start\_decompress, it will end up linking in the entire decompressor.  
\* We thus must separate this file from jdapimin.c to avoid linking the  
\* whole decompression library into a transcoder.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdapistd.c

No license file was found, but licenses were detected in source scan.

/\*

\* cdjpeg.c

\*

\* Copyright (C) 1991-1997, Thomas G. Lane.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains common support routines used by the IJG application

\* programs (cjpeg, djpeg, jpegtran).

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/cdjpeg.c

No license file was found, but licenses were detected in source scan.

/\*

\* jdtrans.c

\*

\* Copyright (C) 1995-1997, Thomas G. Lane.

\* Modified 2000-2009 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains library routines for transcoding decompression,

\* that is, reading raw DCT coefficient arrays from an input JPEG file.

\* The routines in jdapimin.c will also be needed by a transcoder.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdtrans.c

No license file was found, but licenses were detected in source scan.

/\*

\* jaricom.c

\*

\* Developed 1997-2011 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file contains probability estimation tables for common use in  
\* arithmetic entropy encoding and decoding routines.  
\*  
\* This data represents Table D.3 in the JPEG spec (D.2 in the draft),  
\* ISO/IEC IS 10918-1 and CCITT Recommendation ITU-T T.81, and Table 24  
\* in the JBIG spec, ISO/IEC IS 11544 and CCITT Recommendation ITU-T T.82.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jaricom.c  
No license file was found, but licenses were detected in source scan.

/\*  
\* rdcolmap.c  
\*  
\* Copyright (C) 1994-1996, Thomas G. Lane.  
\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file implements djpeg's "-map file" switch. It reads a source image  
\* and constructs a colormap to be supplied to the JPEG decompressor.  
\*  
\* Currently, these file formats are supported for the map file:  
\* GIF: the contents of the GIF's global colormap are used.  
\* PPM (either text or raw flavor): the entire file is read and  
\* each unique pixel value is entered in the map.  
\* Note that reading a large PPM file will be horrendously slow.  
\* Typically, a PPM-format map file should contain just one pixel  
\* of each desired color. Such a file can be extracted from an  
\* ordinary image PPM file with ppmtomap(1).  
\*  
\* Rescaling a PPM that has a maxval unequal to MAXJSAMPLE is not  
\* currently implemented.  
\*/  
/\* Portions of this code are based on the PBMPLUS library, which is:  
\*\*  
\*\* Copyright (C) 1988 by Jef Poskanzer.  
\*\*  
\*\* Permission to use, copy, modify, and distribute this software and its  
\*\* documentation for any purpose and without fee is hereby granted, provided  
\*\* that the above copyright notice appear in all copies and that both that  
\*\* copyright notice and this permission notice appear in supporting  
\*\* documentation. This software is provided "as is" without express or  
\*\* implied warranty.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/rdcolmap.c

No license file was found, but licenses were detected in source scan.

## The Independent JPEG Group's JPEG software

=====

README for release 9e of 16-Jan-2022

=====

This distribution contains the ninth public release of the Independent JPEG Group's free JPEG software. You are welcome to redistribute this software and to use it for any purpose, subject to the conditions under LEGAL ISSUES, below.

This software is the work of Tom Lane, Guido Vollbeding, Philip Gladstone, Bill Allombert, Jim Boucher, Lee Crocker, Bob Friesenhahn, Ben Jackson, John Korejwa, Julian Minguillon, Luis Ortiz, George Phillips, Davide Rossi, Ge' Weijers, and other members of the Independent JPEG Group.

IJG is not affiliated with the ISO/IEC JTC1/SC29/WG1 standards committee (previously known as JPEG, together with ITU-T SG16).

## DOCUMENTATION ROADMAP

=====

This file contains the following sections:

OVERVIEW        General description of JPEG and the IJG software.  
LEGAL ISSUES    Copyright, lack of warranty, terms of distribution.  
REFERENCES      Where to learn more about JPEG.  
ARCHIVE LOCATIONS Where to find newer versions of this software.  
ACKNOWLEDGMENTS Special thanks.  
FILE FORMAT WARS Software \*not\* to get.  
TO DO            Plans for future IJG releases.

Other documentation files in the distribution are:

User documentation:

install.txt     How to configure and install the IJG software.  
usage.txt       Usage instructions for cjpeg, djpeg, jpegtran,  
                 rdjpgcom, and wjjpgcom.  
\*.1             Unix-style man pages for programs (same info as usage.txt).  
wizard.txt      Advanced usage instructions for JPEG wizards only.  
cdaltui.txt     Description of alternate user interface for cjpeg/djpeg.  
change.log      Version-to-version change highlights.

Programmer and internal documentation:

libjpeg.txt    How to use the JPEG library in your own programs.  
example.c     Sample code for calling the JPEG library.  
structure.txt  Overview of the JPEG library's internal structure.  
filelist.txt   Road map of IJG files.  
coderrules.txt Coding style rules --- please read if you contribute code.

Please read at least the files install.txt and usage.txt. Some information can also be found in the JPEG FAQ (Frequently Asked Questions) article. See ARCHIVE LOCATIONS below to find out where to obtain the FAQ article.

If you want to understand how the JPEG code works, we suggest reading one or more of the REFERENCES, then looking at the documentation files (in roughly the order listed) before diving into the code.

## OVERVIEW

=====

This package contains C software to implement JPEG image encoding, decoding, and transcoding. JPEG (pronounced "jay-peg") is a standardized compression method for full-color and grayscale images.

This software implements JPEG baseline, extended-sequential, and progressive compression processes. Provision is made for supporting all variants of these processes, although some uncommon parameter settings aren't implemented yet. We have made no provision for supporting the hierarchical or lossless processes defined in the standard.

We provide a set of library routines for reading and writing JPEG image files, plus two sample applications "cjpeg" and "djpeg", which use the library to perform conversion between JPEG and some other popular image file formats. The library is intended to be reused in other applications.

In order to support file conversion and viewing software, we have included considerable functionality beyond the bare JPEG coding/decoding capability; for example, the color quantization modules are not strictly part of JPEG decoding, but they are essential for output to colormapped file formats or colormapped displays. These extra functions can be compiled out of the library if not required for a particular application.

We have also included "jpegtran", a utility for lossless transcoding between different JPEG processes, and "rdjpgcom" and "wrjpgcom", two simple applications for inserting and extracting textual comments in JFIF files.

The emphasis in designing this software has been on achieving portability and flexibility, while also making it fast enough to be useful. In particular, the software is not intended to be read as a tutorial on JPEG. (See the REFERENCES section for introductory material.) Rather, it is intended to



be reliable, portable, industrial-strength code. We do not claim to have achieved that goal in every aspect of the software, but we strive for it.

We welcome the use of this software as a component of commercial products. No royalty is required, but we do ask for an acknowledgement in product documentation, as described under LEGAL ISSUES.

## LEGAL ISSUES

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In plain English:

1. We don't promise that this software works. (But if you find any bugs, please let us know!)
2. You can use this software for whatever you want. You don't have to pay us.
3. You may not pretend that you wrote this software. If you use it in a program, you must acknowledge somewhere in your documentation that you've used the IJG code.

In legalese:

The authors make NO WARRANTY or representation, either express or implied, with respect to this software, its quality, accuracy, merchantability, or fitness for a particular purpose. This software is provided "AS IS", and you, its user, assume the entire risk as to its quality and accuracy.

This software is copyright (C) 1991-2022, Thomas G. Lane, Guido Vollbeding. All Rights Reserved except as specified below.

Permission is hereby granted to use, copy, modify, and distribute this software (or portions thereof) for any purpose, without fee, subject to these conditions:

- (1) If any part of the source code for this software is distributed, then this README file must be included, with this copyright and no-warranty notice unaltered; and any additions, deletions, or changes to the original files must be clearly indicated in accompanying documentation.
- (2) If only executable code is distributed, then the accompanying documentation must state that "this software is based in part on the work of the Independent JPEG Group".
- (3) Permission for use of this software is granted only if the user accepts full responsibility for any undesirable consequences; the authors accept NO LIABILITY for damages of any kind.

These conditions apply to any software derived from or based on the IJG code, not just to the unmodified library. If you use our work, you ought to acknowledge us.

Permission is NOT granted for the use of any IJG author's name or company name in advertising or publicity relating to this software or products derived from it. This software may be referred to only as "the Independent JPEG Group's software".

We specifically permit and encourage the use of this software as the basis of commercial products, provided that all warranty or liability claims are assumed by the product vendor.

The Unix configuration script "configure" was produced with GNU Autoconf. It is copyright by the Free Software Foundation but is freely distributable. The same holds for its supporting scripts (config.guess, config.sub, ltmain.sh). Another support script, install-sh, is copyright by X Consortium but is also freely distributable.

## REFERENCES

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We recommend reading one or more of these references before trying to understand the innards of the JPEG software.

The best short technical introduction to the JPEG compression algorithm is Wallace, Gregory K. "The JPEG Still Picture Compression Standard", Communications of the ACM, April 1991 (vol. 34 no. 4), pp. 30-44. (Adjacent articles in that issue discuss MPEG motion picture compression, applications of JPEG, and related topics.) If you don't have the CACM issue handy, a PDF file containing a revised version of Wallace's article is available at <https://www.ijg.org/files/Wallace.JPEG.pdf>. The file (actually a preprint for an article that appeared in IEEE Trans. Consumer Electronics) omits the sample images that appeared in CACM, but it includes corrections and some added material. Note: the Wallace article is copyright ACM and IEEE, and it may not be used for commercial purposes.

A somewhat less technical, more leisurely introduction to JPEG can be found in "The Data Compression Book" by Mark Nelson and Jean-loup Gailly, published by M&T Books (New York), 2nd ed. 1996, ISBN 1-55851-434-1. This book provides good explanations and example C code for a multitude of compression methods including JPEG. It is an excellent source if you are comfortable reading C code but don't know much about data compression in general. The book's JPEG sample code is far from industrial-strength, but when you are ready to look at a full implementation, you've got one here...

The best currently available description of JPEG is the textbook "JPEG Still Image Data Compression Standard" by William B. Pennebaker and Joan L. Mitchell, published by Van Nostrand Reinhold, 1993, ISBN 0-442-01272-1. Price US\$59.95, 638 pp. The book includes the complete text of the ISO JPEG

standards (DIS 10918-1 and draft DIS 10918-2).

Although this is by far the most detailed and comprehensive exposition of JPEG publicly available, we point out that it is still missing an explanation of the most essential properties and algorithms of the underlying DCT technology.

If you think that you know about DCT-based JPEG after reading this book, then you are in delusion. The real fundamentals and corresponding potential of DCT-based JPEG are not publicly known so far, and that is the reason for all the mistaken developments taking place in the image coding domain.

The original JPEG standard is divided into two parts, Part 1 being the actual specification, while Part 2 covers compliance testing methods. Part 1 is titled "Digital Compression and Coding of Continuous-tone Still Images, Part 1: Requirements and guidelines" and has document numbers ISO/IEC IS 10918-1, ITU-T T.81. Part 2 is titled "Digital Compression and Coding of Continuous-tone Still Images, Part 2: Compliance testing" and has document numbers ISO/IEC IS 10918-2, ITU-T T.83.

IJG JPEG 8 introduced an implementation of the JPEG SmartScale extension which is specified in two documents: A contributed document at ITU and ISO with title "ITU-T JPEG-Plus Proposal for Extending ITU-T T.81 for Advanced Image Coding", April 2006, Geneva, Switzerland. The latest version of this document is Revision 3. And a contributed document ISO/IEC JTC1/SC29/WG1 N 5799 with title "Evolution of JPEG", June/July 2011, Berlin, Germany.

IJG JPEG 9 introduces a reversible color transform for improved lossless compression which is described in a contributed document ISO/IEC JTC1/SC29/WG1 N 6080 with title "JPEG 9 Lossless Coding", June/July 2012, Paris, France.

The JPEG standard does not specify all details of an interchangeable file format. For the omitted details we follow the "JFIF" conventions, version 2. JFIF version 1 has been adopted as Recommendation ITU-T T.871 (05/2011) : Information technology - Digital compression and coding of continuous-tone still images: JPEG File Interchange Format (JFIF). It is available as a free download in PDF file format from <https://www.itu.int/rec/T-REC-T.871>. A PDF file of the older JFIF document is available at <https://www.w3.org/Graphics/JPEG/jfif3.pdf>.

The TIFF 6.0 file format specification can be obtained by FTP from <ftp://ftp.sgi.com/graphics/tiff/TIFF6.ps.gz>. The JPEG incorporation scheme found in the TIFF 6.0 spec of 3-June-92 has a number of serious problems. IJG does not recommend use of the TIFF 6.0 design (TIFF Compression tag 6). Instead, we recommend the JPEG design proposed by TIFF Technical Note #2 (Compression tag 7). Copies of this Note can be obtained from <https://www.ijg.org/files/>. It is expected that the next revision of the TIFF spec will replace the 6.0 JPEG design with the Note's design. Although IJG's own code does not support TIFF/JPEG, the free libtiff library uses our library to implement TIFF/JPEG per the Note.

## ARCHIVE LOCATIONS

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The "official" archive site for this software is [www.ijg.org](http://www.ijg.org).  
The most recent released version can always be found there in  
directory "files". This particular version will be archived  
in Windows-compatible "zip" archive format as  
<https://www.ijg.org/files/jpegsr9e.zip>, and  
in Unix-compatible "tar.gz" archive format as  
<https://www.ijg.org/files/jpegsr.v9e.tar.gz>.

The JPEG FAQ (Frequently Asked Questions) article is a source of some  
general information about JPEG.

It is available on the World Wide Web at <http://www.faqs.org/faqs/jpeg-faq/>  
and other news.answers archive sites, including the official news.answers  
archive at [rtfm.mit.edu](http://rtfm.mit.edu): <ftp://rtfm.mit.edu/pub/usenet/news.answers/jpeg-faq/>.  
If you don't have Web or FTP access, send e-mail to [mail-server@rtfm.mit.edu](mailto:mail-server@rtfm.mit.edu)  
with body  
send usenet/news.answers/jpeg-faq/part1  
send usenet/news.answers/jpeg-faq/part2

## ACKNOWLEDGMENTS

=====

Thank to Juergen Bruder for providing me with a copy of the common DCT  
algorithm article, only to find out that I had come to the same result  
in a more direct and comprehensible way with a more generative approach.

Thank to Istvan Sebestyen and Joan L. Mitchell for inviting me to the  
ITU JPEG (Study Group 16) meeting in Geneva, Switzerland.

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Thank to Thomas Richter and Daniel Lee for inviting me to the  
ISO/IEC JTC1/SC29/WG1 (previously known as JPEG, together with ITU-T SG16)  
meeting in Berlin, Germany.

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Thank to Lars Goehler, Andreas Heinecke, Sebastian Fuss, Yvonne Roebert, Andrej Werner, Ulf-Dietrich Braumann, and Nina Ssymank for support and public relations.

## FILE FORMAT WARS

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The ISO/IEC JTC1/SC29/WG1 standards committee (previously known as JPEG, together with ITU-T SG16) currently promotes different formats containing the name "JPEG" which is misleading because these formats are incompatible with original DCT-based JPEG and are based on faulty technologies. IJG therefore does not and will not support such momentary mistakes (see REFERENCES).

There exist also distributions under the name "OpenJPEG" promoting such kind of formats which is misleading because they don't support original JPEG images.

We have no sympathy for the promotion of inferior formats. Indeed, one of the original reasons for developing this free software was to help force convergence on common, interoperable format standards for JPEG files.

Don't use an incompatible file format!

(In any case, our decoder will remain capable of reading existing JPEG image files indefinitely.)

The ISO committee pretends to be "responsible for the popular JPEG" in their public reports which is not true because they don't respond to actual requirements for the maintenance of the original JPEG specification.

Furthermore, the ISO committee pretends to "ensure interoperability" with their standards which is not true because their "standards" support only application-specific and proprietary use cases and contain mathematically incorrect code.

There are currently different distributions in circulation containing the name "libjpeg" which is misleading because they don't have the features and are incompatible with formats supported by actual IJG libjpeg distributions. One of those fakes is released by members of the ISO committee and just uses the name of libjpeg for misdirection of people, similar to the abuse of the name JPEG as described above, while having nothing in common with actual IJG

libjpeg distributions and containing mathematically incorrect code.  
The other one claims to be a "derivative" or "fork" of the original libjpeg,  
but violates the license conditions as described under LEGAL ISSUES above  
and violates basic C programming properties.  
We have no sympathy for the release of misleading, incorrect and illegal  
distributions derived from obsolete code bases.  
Don't use an obsolete code base!

According to the UCC (Uniform Commercial Code) law, IJG has the lawful and  
legal right to foreclose on certain standardization bodies and other  
institutions or corporations that knowingly perform substantial and  
systematic deceptive acts and practices, fraud, theft, and damaging of the  
value of the people of this planet without their knowing, willing and  
intentional consent.

The titles, ownership, and rights of these institutions and all their assets  
are now duly secured and held in trust for the free people of this planet.  
People of the planet, on every country, may have a financial interest in  
the assets of these former principals, agents, and beneficiaries of the  
foreclosed institutions and corporations.

IJG asserts what is: that each man, woman, and child has unalienable value  
and rights granted and deposited in them by the Creator and not any one of  
the people is subordinate to any artificial principality, corporate fiction  
or the special interest of another without their appropriate knowing,  
willing and intentional consent made by contract or accommodation agreement.  
IJG expresses that which already was.

The people have already determined and demanded that public administration  
entities, national governments, and their supporting judicial systems must  
be fully transparent, accountable, and liable.

IJG has secured the value for all concerned free people of the planet.

A partial list of foreclosed institutions and corporations ("Hall of Shame")  
is currently prepared and will be published later.

TO DO

=====

Version 9 is the second release of a new generation JPEG standard  
to overcome the limitations of the original JPEG specification,  
and is the first true source reference JPEG codec.  
More features are being prepared for coming releases...

Please send bug reports, offers of help, etc. to [jpeg-info@jpegclub.org](mailto:jpeg-info@jpegclub.org).

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/README

No license file was found, but licenses were detected in source scan.

## IJG JPEG LIBRARY: ALTERNATE USER INTERFACE FOR CJPEG/DJPEG

Copyright (C) 2020, Guido Vollbeding.

This file is part of the Independent JPEG Group's software.

For conditions of distribution and use, see the accompanying README file.

There is an alternate command-line user interface for the IJG JPEG software. It is designed for use under MS-DOS, and may also be useful on other non-Unix operating systems. (For that matter, this code works fine on Unix, but the standard command-line syntax is better on Unix because it is pipe-friendly.)

With this user interface, cjpeg and djpeg accept multiple input file names on the command line; output file names are generated by substituting appropriate extensions. The user is prompted before any already-existing file will be overwritten.

Expansion of wild-card file specifications is useful but is not directly provided by this code. Most DOS C compilers have the ability to do wild-card expansion "behind the scenes", and we rely on that feature. On other systems, the shell may do it for you, as is done on Unix.

Also, a DOS-specific routine is provided to determine available memory; this makes the -maxmemory switch unnecessary except in unusual cases. If you know how to determine available memory on a different system, you can easily add the necessary code. (And please send it along to jpeg-info@jpegclub.org so we can include it in future releases!)

### INSTALLATION

=====

Rename the standard cjpeg.c file to cjpegstd.c, then rename cjpegalt.c to cjpeg.c.

Rename the standard djpeg.c file to djpegstd.c, then rename djpegalt.c to djpeg.c.

Then build the software as described in install.txt, with these exceptions:

- \* Define PROGRESS\_REPORT in jconfig.h if you want the percent-done display.
- \* Define NO\_OVERWRITE\_CHECK if you \*don't\* want overwrite confirmation.
- \* You may ignore the USE\_SETMODE and TWO\_FILE\_COMMANDLINE symbols discussed in install.txt; these files do not use them.
- \* As given, djpegalt.c defaults to BMP output (not PPM output as in the standard djpeg.c). If you want something different, modify DEFAULT\_FMT.

You may also need to do something special to enable filename wild-card expansion, assuming your compiler has that capability at all.

Modify the standard usage.txt file as described below. (If you want to use the Unix-style manual pages cjpeg.1 and djpeg.1, better fix them too.)

To restore the standard user interface:

Rename cjpeg.c to cjpegalt.c, then rename cjpegstd.c to cjpeg.c.

Rename djpeg.c to djpegalt.c, then rename djpegstd.c to djpeg.c.

Then recompile/rebuild.

Here are some specific notes for popular MS-DOS compilers:

Borland C:

Add "-DMSDOS" to CFLAGS to enable use of the DOS memory determination code.

Link with the standard library file WILDARGS.OBJ to get wild-card expansion.

Microsoft C:

Add "-DMSDOS" to CFLAGS to enable use of the DOS memory determination code.

Link with the standard library file SETARGV.OBJ to get wild-card expansion.

In the versions I've used, you must also add /NOE to the linker switches to avoid a duplicate-symbol error from including SETARGV.

DJGPP (we recommend version 2.0 or later):

Add "-DFREE\_MEM\_ESTIMATE=0" to CFLAGS. Wild-card expansion is automatic.

## USAGE

=====

Most of the standard usage.txt file also applies to the alternate version, but replace its "GENERAL USAGE" section with the text below. Edit the text as necessary if you don't support wildcards or overwrite checking. Be sure to fix the djpeg switch descriptions if you are not defaulting to PPM output. Also, if you've provided an accurate memory-estimation procedure, you can probably eliminate the HINTS related to the -maxmemory switch.

## GENERAL USAGE

We provide two programs, cjpeg to compress an image file into JPEG format, and djpeg to decompress a JPEG file back into a conventional image format.

The basic command line is:

cjpeg [switches] list of image files

or

djpeg [switches] list of jpeg files

Each file named is compressed or decompressed. The input file(s) are not modified; the output data is written to files which have the same names



except for extension. cjpeg always uses ".jpg" for the output file name's extension; djpeg uses one of ".bmp", ".gif", ".ppm", ".rle", or ".tga", depending on what output format is selected by the switches.

For example, to convert xxx.bmp to xxx.jpg and yyy.ppm to yyy.jpg, say:  
cjpeg xxx.bmp yyy.ppm

On most systems you can use standard wildcards to specify the list of input files; for example, on DOS "djpeg \*.jpg" decompresses all the JPEG files in the current directory.

If an intended output file already exists, you'll be asked whether or not to overwrite it. If you say no, the program skips that input file and goes on to the next one.

You can intermix switches and file names; for example  
djpeg -gif file1.jpg -targa file2.jpg  
decompresses file1.jpg into GIF format (file1.gif) and file2.jpg into Targa format (file2.tga). Only switches to the left of a given file name affect processing of that file; when there are conflicting switches, the rightmost one takes precedence.

You can override the program's choice of output file name by using the -outfile switch, as in

```
cjpeg -outfile output.jpg input.ppm
```

-outfile only affects the first input file name to its right.

The currently supported image file formats are: PPM (PBMPLUS color format), PGM (PBMPLUS grayscale format), BMP, GIF, Targa, and RLE (Utah Raster Toolkit format). (RLE is supported only if the URT library is available, which it isn't on most non-Unix systems.) cjpeg recognizes the input image format automatically, with the exception of some Targa-format files. You have to tell djpeg which format to generate.

JPEG files are in the standard JFIF file format. There are other, less widely used JPEG-based file formats, but we don't support them.

All switch names may be abbreviated; for example, -grayscale may be written -gray or -gr. Most of the "basic" switches can be abbreviated to as little as one letter. Upper and lower case are equivalent (-BMP is the same as -bmp). British spellings are also accepted (e.g., -greyscale), though for brevity these are not mentioned below.

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/cdaltui.txt

No license file was found, but licenses were detected in source scan.

/\*

```
* jdmainct.c
*
* Copyright (C) 1994-1996, Thomas G. Lane.
* Modified 2002-2020 by Guido Vollbeding.
* This file is part of the Independent JPEG Group's software.
* For conditions of distribution and use, see the accompanying README file.
*
* This file contains the main buffer controller for decompression.
* The main buffer lies between the JPEG decompressor proper and the
* post-processor; it holds downsampled data in the JPEG colorspace.
*
* Note that this code is bypassed in raw-data mode, since the application
* supplies the equivalent of the main buffer in that case.
*/
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdmainct.c
No license file was found, but licenses were detected in source scan.
```

```
/*
* wrppm.c
*
* Copyright (C) 1991-1996, Thomas G. Lane.
* Modified 2009-2020 by Guido Vollbeding.
* This file is part of the Independent JPEG Group's software.
* For conditions of distribution and use, see the accompanying README file.
*
* This file contains routines to write output images in PPM/PGM format.
* The extended 2-byte-per-sample raw PPM/PGM formats are supported.
* The PBMPLUS library is NOT required to compile this software
* (but it is highly useful as a set of PPM image manipulation programs).
*
* These routines may need modification for non-Unix environments or
* specialized applications. As they stand, they assume output to
* an ordinary stdio stream.
*/
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/wrppm.c
No license file was found, but licenses were detected in source scan.
```

```
/*
* jdapimin.c
*
* Copyright (C) 1994-1998, Thomas G. Lane.
* Modified 2009-2020 by Guido Vollbeding.
* This file is part of the Independent JPEG Group's software.
* For conditions of distribution and use, see the accompanying README file.
```

\*  
\* This file contains application interface code for the decompression half  
\* of the JPEG library. These are the "minimum" API routines that may be  
\* needed in either the normal full-decompression case or the  
\* transcoding-only case.  
\*  
\* Most of the routines intended to be called directly by an application  
\* are in this file or in jdapistd.c. But also see jcomapi.c for routines  
\* shared by compression and decompression, and jdtrans.c for the transcoding  
\* case.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdapimin.c  
No license file was found, but licenses were detected in source scan.

/\*  
\* wrjpgcom.c  
\*  
\* Copyright (C) 1994-1997, Thomas G. Lane.  
\* Modified 2015-2017 by Guido Vollbeding.  
\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file contains a very simple stand-alone application that inserts  
\* user-supplied text as a COM (comment) marker in a JFIF file.  
\* This may be useful as an example of the minimum logic needed to parse  
\* JPEG markers.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/wrjpgcom.c  
No license file was found, but licenses were detected in source scan.

/\*  
\* jcinit.c  
\*  
\* Copyright (C) 1991-1997, Thomas G. Lane.  
\* Modified 2003-2017 by Guido Vollbeding.  
\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file contains initialization logic for the JPEG compressor.  
\* This routine is in charge of selecting the modules to be executed and  
\* making an initialization call to each one.  
\*  
\* Logically, this code belongs in jcmaster.c. It's split out because  
\* linking this routine implies linking the entire compression library.

- \* For a transcoding-only application, we want to be able to use jcmaster.c
- \* without linking in the whole library.
- \*/

Found in path(s):

\*/opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jcinit.c

No license file was found, but licenses were detected in source scan.

/\*

\* jidctint.c

\*

\* Copyright (C) 1991-1998, Thomas G. Lane.

\* Modification developed 2002-2018 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains a slow-but-accurate integer implementation of the

\* inverse DCT (Discrete Cosine Transform). In the IJG code, this routine

\* must also perform dequantization of the input coefficients.

\*

\* A 2-D IDCT can be done by 1-D IDCT on each column followed by 1-D IDCT

\* on each row (or vice versa, but it's more convenient to emit a row at

\* a time). Direct algorithms are also available, but they are much more

\* complex and seem not to be any faster when reduced to code.

\*

\* This implementation is based on an algorithm described in

\* C. Loeffler, A. Ligtenberg and G. Moschytz, "Practical Fast 1-D DCT

\* Algorithms with 11 Multiplications", Proc. Int'l. Conf. on Acoustics,

\* Speech, and Signal Processing 1989 (ICASSP '89), pp. 988-991.

\* The primary algorithm described there uses 11 multiplies and 29 adds.

\* We use their alternate method with 12 multiplies and 32 adds.

\* The advantage of this method is that no data path contains more than one

\* multiplication; this allows a very simple and accurate implementation in

\* scaled fixed-point arithmetic, with a minimal number of shifts.

\*

\* We also provide IDCT routines with various output sample block sizes for

\* direct resolution reduction or enlargement and for direct resolving the

\* common 2x1 and 1x2 subsampling cases without additional resampling: NxN

\* (N=1...16), 2NxN, and Nx2N (N=1...8) pixels for one 8x8 input DCT block.

\*

\* For N<8 we simply take the corresponding low-frequency coefficients of

\* the 8x8 input DCT block and apply an NxN point IDCT on the sub-block

\* to yield the downsampled outputs.

\* This can be seen as direct low-pass downsampling from the DCT domain

\* point of view rather than the usual spatial domain point of view,

\* yielding significant computational savings and results at least

\* as good as common bilinear (averaging) spatial downsampling.

\*

- \* For  $N > 8$  we apply a partial  $N \times N$  IDCT on the 8 input coefficients as
- \* lower frequencies and higher frequencies assumed to be zero.
- \* It turns out that the computational effort is similar to the  $8 \times 8$  IDCT
- \* regarding the output size.
- \* Furthermore, the scaling and descaling is the same for all IDCT sizes.
- \*
- \* CAUTION: We rely on the FIX() macro except for the  $N=1,2,4,8$  cases
- \* since there would be too many additional constants to pre-calculate.
- \*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jidctint.c  
No license file was found, but licenses were detected in source scan.

/\*

\* jcomapi.c

\*

\* Copyright (C) 1994-1997, Thomas G. Lane.

\* Modified 2019 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains application interface routines that are used for both

\* compression and decompression.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jcomapi.c  
No license file was found, but licenses were detected in source scan.

/\*

\* transupp.h

\*

\* Copyright (C) 1997-2019, Thomas G. Lane, Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains declarations for image transformation routines and

\* other utility code used by the jpegtran sample application. These are

\* NOT part of the core JPEG library. But we keep these routines separate

\* from jpegtran.c to ease the task of maintaining jpegtran-like programs

\* that have other user interfaces.

\*

\* NOTE: all the routines declared here have very specific requirements

\* about when they are to be executed during the reading and writing of the

\* source and destination files. See the comments in transupp.c, or see

\* jpegtran.c for an example of correct usage.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/transupp.h

No license file was found, but licenses were detected in source scan.

/\*

\* alternate cjpeg.c

\*

\* Copyright (C) 1991-1998, Thomas G. Lane.

\* Modified 2009-2020 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains an alternate user interface for the JPEG compressor.

\* One or more input files are named on the command line, and output file

\* names are created by substituting ".jpg" for the input file's extension.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/cjpegalt.c

No license file was found, but licenses were detected in source scan.

/\*

\* jfdctint.c

\*

\* Copyright (C) 1991-1996, Thomas G. Lane.

\* Modification developed 2003-2018 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains a slow-but-accurate integer implementation of the

\* forward DCT (Discrete Cosine Transform).

\*

\* A 2-D DCT can be done by 1-D DCT on each row followed by 1-D DCT

\* on each column. Direct algorithms are also available, but they are

\* much more complex and seem not to be any faster when reduced to code.

\*

\* This implementation is based on an algorithm described in

\* C. Loeffler, A. Ligtenberg and G. Moschytz, "Practical Fast 1-D DCT

\* Algorithms with 11 Multiplications", Proc. Int'l. Conf. on Acoustics,

\* Speech, and Signal Processing 1989 (ICASSP '89), pp. 988-991.

\* The primary algorithm described there uses 11 multiplies and 29 adds.

\* We use their alternate method with 12 multiplies and 32 adds.

\* The advantage of this method is that no data path contains more than one

\* multiplication; this allows a very simple and accurate implementation in

\* scaled fixed-point arithmetic, with a minimal number of shifts.

\*

\* We also provide FDCT routines with various input sample block sizes for

- \* direct resolution reduction or enlargement and for direct resolving the
- \* common 2x1 and 1x2 subsampling cases without additional resampling: NxN
- \* (N=1...16), 2NxN, and Nx2N (N=1...8) pixels for one 8x8 output DCT block.
- \*
- \* For N<8 we fill the remaining block coefficients with zero.
- \* For N>8 we apply a partial N-point FDCT on the input samples, computing
- \* just the lower 8 frequency coefficients and discarding the rest.
- \*
- \* We must scale the output coefficients of the N-point FDCT appropriately
- \* to the standard 8-point FDCT level by 8/N per 1-D pass. This scaling
- \* is folded into the constant multipliers (pass 2) and/or final/initial
- \* shifting.
- \*
- \* CAUTION: We rely on the FIX() macro except for the N=1,2,4,8 cases
- \* since there would be too many additional constants to pre-calculate.
- \*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jfdctint.c

No license file was found, but licenses were detected in source scan.

/\*

\* jddctmgr.c

\*

\* Copyright (C) 1994-1996, Thomas G. Lane.

\* Modified 2002-2013 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains the inverse-DCT management logic.

\* This code selects a particular IDCT implementation to be used,

\* and it performs related housekeeping chores. No code in this file

\* is executed per IDCT step, only during output pass setup.

\*

\* Note that the IDCT routines are responsible for performing coefficient

\* dequantization as well as the IDCT proper. This module sets up the

\* dequantization multiplier table needed by the IDCT routine.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jddctmgr.c

No license file was found, but licenses were detected in source scan.

/\*

\* jccolor.c

\*

\* Copyright (C) 1991-1996, Thomas G. Lane.

\* Modified 2011-2019 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file contains input colorspace conversion routines.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jccolor.c  
No license file was found, but licenses were detected in source scan.

/\*

\* cdjpeg.h

\*

\* Copyright (C) 1994-1997, Thomas G. Lane.  
\* Modified 2019 by Guido Vollbeding.  
\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file contains common declarations for the sample applications  
\* cjpeg and djpeg. It is NOT used by the core JPEG library.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/cdjpeg.h  
No license file was found, but licenses were detected in source scan.

/\*

\* jchuff.c

\*

\* Copyright (C) 1991-1997, Thomas G. Lane.  
\* Modified 2006-2020 by Guido Vollbeding.  
\* This file is part of the Independent JPEG Group's software.  
\* For conditions of distribution and use, see the accompanying README file.  
\*  
\* This file contains Huffman entropy encoding routines.  
\* Both sequential and progressive modes are supported in this single module.  
\*  
\* Much of the complexity here has to do with supporting output suspension.  
\* If the data destination module demands suspension, we want to be able to  
\* back up to the start of the current MCU. To do this, we copy state  
\* variables into local working storage, and update them back to the  
\* permanent JPEG objects only upon successful completion of an MCU.  
\*  
\* We do not support output suspension for the progressive JPEG mode, since  
\* the library currently does not allow multiple-scan files to be written  
\* with output suspension.  
\*/



Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jchuff.c

No license file was found, but licenses were detected in source scan.

/\*

\* jccoefct.c

\*

\* Copyright (C) 1994-1997, Thomas G. Lane.

\* Modified 2003-2020 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains the coefficient buffer controller for compression.

\* This controller is the top level of the JPEG compressor proper.

\* The coefficient buffer lies between forward-DCT and entropy encoding steps.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jccoefct.c

No license file was found, but licenses were detected in source scan.

/\*

\* jerror.c

\*

\* Copyright (C) 1991-1998, Thomas G. Lane.

\* Modified 2012-2015 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains simple error-reporting and trace-message routines.

\* These are suitable for Unix-like systems and others where writing to

\* stderr is the right thing to do. Many applications will want to replace

\* some or all of these routines.

\*

\* If you define USE\_WINDOWS\_MESSAGEBOX in jconfig.h or in the makefile,

\* you get a Windows-specific hack to display error messages in a dialog box.

\* It ain't much, but it beats dropping error messages into the bit bucket,

\* which is what happens to output to stderr under most Windows C compilers.

\*

\* These routines are used by both the compression and decompression code.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jerror.c

No license file was found, but licenses were detected in source scan.

USING THE IJG JPEG LIBRARY

Copyright (C) 1994-2019, Thomas G. Lane, Guido Vollbeding.  
This file is part of the Independent JPEG Group's software.  
For conditions of distribution and use, see the accompanying README file.

This file describes how to use the IJG JPEG library within an application program. Read it if you want to write a program that uses the library.

The file `example.c` provides heavily commented skeleton code for calling the JPEG library. Also see `jpeglib.h` (the include file to be used by application programs) for full details about data structures and function parameter lists. The library source code, of course, is the ultimate reference.

Note that there have been \*major\* changes from the application interface presented by IJG version 4 and earlier versions. The old design had several inherent limitations, and it had accumulated a lot of cruft as we added features while trying to minimize application-interface changes. We have sacrificed backward compatibility in the version 5 rewrite, but we think the improvements justify this.

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You should read at least the overview and basic usage sections before trying to program with the library. The sections on advanced features can be read if and when you need them.

## OVERVIEW

=====

### Functions provided by the library

-----

The IJG JPEG library provides C code to read and write JPEG-compressed image files. The surrounding application program receives or supplies image data a scanline at a time, using a straightforward uncompressed image format. All details of color conversion and other preprocessing/postprocessing can be handled by the library.

The library includes a substantial amount of code that is not covered by the JPEG standard but is necessary for typical applications of JPEG. These functions preprocess the image before JPEG compression or postprocess it after decompression. They include colorspace conversion, downsampling/upsampling, and color quantization. The application indirectly selects use of this code by specifying the format in which it wishes to supply or receive image data. For example, if colormapped output is requested, then the decompression library automatically invokes color quantization.

A wide range of quality vs. speed tradeoffs are possible in JPEG processing, and even more so in decompression postprocessing. The decompression library provides multiple implementations that cover most of the useful tradeoffs, ranging from very-high-quality down to fast-preview operation. On the compression side we have generally not provided low-quality choices, since compression is normally less time-critical. It should be understood that the low-quality modes may not meet the JPEG standard's accuracy requirements; nonetheless, they are useful for viewers.

A word about functions *\*not\** provided by the library. We handle a subset of the ISO JPEG standard; most baseline, extended-sequential, and progressive JPEG processes are supported. (Our subset includes all features now in common use.) Unsupported ISO options include:

- \* Hierarchical storage
- \* Lossless JPEG
- \* DNL marker
- \* Nonintegral subsampling ratios

We support 8-bit to 12-bit data precision, but this is a compile-time choice

rather than a run-time choice; hence it is difficult to use different precisions in a single application.

By itself, the library handles only interchange JPEG datastreams --- in particular the widely used JFIF file format. The library can be used by surrounding code to process interchange or abbreviated JPEG datastreams that are embedded in more complex file formats. (For example, this library is used by the free LIBTIFF library to support JPEG compression in TIFF.)

#### Outline of typical usage

-----

The rough outline of a JPEG compression operation is:

```
Allocate and initialize a JPEG compression object
Specify the destination for the compressed data (eg, a file)
Set parameters for compression, including image size & colorspace
jpeg_start_compress(...);
while (scan lines remain to be written)
    jpeg_write_scanlines(...);
jpeg_finish_compress(...);
Release the JPEG compression object
```

A JPEG compression object holds parameters and working state for the JPEG library. We make creation/destruction of the object separate from starting or finishing compression of an image; the same object can be re-used for a series of image compression operations. This makes it easy to re-use the same parameter settings for a sequence of images. Re-use of a JPEG object also has important implications for processing abbreviated JPEG datastreams, as discussed later.

The image data to be compressed is supplied to `jpeg_write_scanlines()` from in-memory buffers. If the application is doing file-to-file compression, reading image data from the source file is the application's responsibility. The library emits compressed data by calling a "data destination manager", which typically will write the data into a file; but the application can provide its own destination manager to do something else.

Similarly, the rough outline of a JPEG decompression operation is:

```
Allocate and initialize a JPEG decompression object
Specify the source of the compressed data (eg, a file)
Call jpeg_read_header() to obtain image info
Set parameters for decompression
jpeg_start_decompress(...);
while (scan lines remain to be read)
    jpeg_read_scanlines(...);
```

```
jpeg_finish_decompress(...);  
Release the JPEG decompression object
```

This is comparable to the compression outline except that reading the datastream header is a separate step. This is helpful because information about the image's size, colorspace, etc is available when the application selects decompression parameters. For example, the application can choose an output scaling ratio that will fit the image into the available screen size.

The decompression library obtains compressed data by calling a data source manager, which typically will read the data from a file; but other behaviors can be obtained with a custom source manager. Decompressed data is delivered into in-memory buffers passed to `jpeg_read_scanlines()`.

It is possible to abort an incomplete compression or decompression operation by calling `jpeg_abort()`; or, if you do not need to retain the JPEG object, simply release it by calling `jpeg_destroy()`.

JPEG compression and decompression objects are two separate struct types. However, they share some common fields, and certain routines such as `jpeg_destroy()` can work on either type of object.

The JPEG library has no static variables: all state is in the compression or decompression object. Therefore it is possible to process multiple compression and decompression operations concurrently, using multiple JPEG objects.

Both compression and decompression can be done in an incremental memory-to-memory fashion, if suitable source/destination managers are used. See the section on "I/O suspension" for more details.

## BASIC LIBRARY USAGE

=====

### Data formats

-----

Before diving into procedural details, it is helpful to understand the image data format that the JPEG library expects or returns.

The standard input image format is a rectangular array of pixels, with each pixel having the same number of "component" or "sample" values (color channels). You must specify how many components there are and the colorspace interpretation of the components. Most applications will use RGB data (three components per pixel) or grayscale data (one component per pixel).

**PLEASE NOTE THAT RGB DATA IS THREE SAMPLES PER PIXEL, GRAYSCALE ONLY ONE.**

A remarkable number of people manage to miss this, only to find that their

programs don't work with grayscale JPEG files.

There is no provision for colormapped input. JPEG files are always full-color or full grayscale (or sometimes another colorspace such as CMYK). You can feed in a colormapped image by expanding it to full-color format. However JPEG often doesn't work very well with source data that has been colormapped, because of dithering noise. This is discussed in more detail in the JPEG FAQ and the other references mentioned in the README file.

Pixels are stored by scanlines, with each scanline running from left to right. The component values for each pixel are adjacent in the row; for example, R,G,B,R,G,B,R,G,B,... for 24-bit RGB color. Each scanline is an array of data type JSAMPLE --- which is typically "unsigned char", unless you've changed `jmreconf.h`. (You can also change the RGB pixel layout, say to B,G,R order, by modifying `jmreconf.h`. But see the restrictions listed in that file before doing so.)

A 2-D array of pixels is formed by making a list of pointers to the starts of scanlines; so the scanlines need not be physically adjacent in memory. Even if you process just one scanline at a time, you must make a one-element pointer array to conform to this structure. Pointers to JSAMPLE rows are of type JSAMPROW, and the pointer to the pointer array is of type JSAMPARRAY.

The library accepts or supplies one or more complete scanlines per call. It is not possible to process part of a row at a time. Scanlines are always processed top-to-bottom. You can process an entire image in one call if you have it all in memory, but usually it's simplest to process one scanline at a time.

For best results, source data values should have the precision specified by `BITS_IN_JSAMPLE` (normally 8 bits). For instance, if you choose to compress data that's only 6 bits/channel, you should left-justify each value in a byte before passing it to the compressor. If you need to compress data that has more than 8 bits/channel, compile with `BITS_IN_JSAMPLE = 9 to 12`. (See "Library compile-time options", later.)

The data format returned by the decompressor is the same in all details, except that colormapped output is supported. (Again, a JPEG file is never colormapped. But you can ask the decompressor to perform on-the-fly color quantization to deliver colormapped output.) If you request colormapped output then the returned data array contains a single JSAMPLE per pixel; its value is an index into a color map. The color map is represented as a 2-D JSAMPARRAY in which each row holds the values of one color component, that is, `colormap[i][j]` is the value of the *i*'th color component for pixel value (map index) *j*. Note that since the colormap indexes are stored in JSAMPLEs, the maximum number of colors is limited by the size of JSAMPLE (ie, at most 256 colors for an 8-bit JPEG library).

## Compression details

-----

Here we revisit the JPEG compression outline given in the overview.

### 1. Allocate and initialize a JPEG compression object.

A JPEG compression object is a "struct jpeg\_compress\_struct". (It also has a bunch of subsidiary structures which are allocated via malloc(), but the application doesn't control those directly.) This struct can be just a local variable in the calling routine, if a single routine is going to execute the whole JPEG compression sequence. Otherwise it can be static or allocated from malloc().

You will also need a structure representing a JPEG error handler. The part of this that the library cares about is a "struct jpeg\_error\_mgr". If you are providing your own error handler, you'll typically want to embed the jpeg\_error\_mgr struct in a larger structure; this is discussed later under "Error handling". For now we'll assume you are just using the default error handler. The default error handler will print JPEG error/warning messages on stderr, and it will call exit() if a fatal error occurs.

You must initialize the error handler structure, store a pointer to it into the JPEG object's "err" field, and then call jpeg\_create\_compress() to initialize the rest of the JPEG object.

Typical code for this step, if you are using the default error handler, is

```
struct jpeg_compress_struct cinfo;
struct jpeg_error_mgr jerr;
...
cinfo.err = jpeg_std_error(&jerr);
jpeg_create_compress(&cinfo);
```

jpeg\_create\_compress allocates a small amount of memory, so it could fail if you are out of memory. In that case it will exit via the error handler; that's why the error handler must be initialized first.

### 2. Specify the destination for the compressed data (eg, a file).

As previously mentioned, the JPEG library delivers compressed data to a "data destination" module. The library includes one data destination module which knows how to write to a stdio stream. You can use your own destination module if you want to do something else, as discussed later.

If you use the standard destination module, you must open the target stdio stream beforehand. Typical code for this step looks like:

```
FILE * outfile;
...
if ((outfile = fopen(filename, "wb")) == NULL) {
    fprintf(stderr, "can't open %s\n", filename);
    exit(1);
}
jpeg_stdio_dest(&cinfo, outfile);
```

where the last line invokes the standard destination module.

**WARNING:** it is critical that the binary compressed data be delivered to the output file unchanged. On non-Unix systems the stdio library may perform newline translation or otherwise corrupt binary data. To suppress this behavior, you may need to use a "b" option to fopen (as shown above), or use setmode() or another routine to put the stdio stream in binary mode. See cjpeg.c and djpeg.c for code that has been found to work on many systems.

You can select the data destination after setting other parameters (step 3), if that's more convenient. You may not change the destination between calling jpeg\_start\_compress() and jpeg\_finish\_compress().

### 3. Set parameters for compression, including image size & colorspace.

You must supply information about the source image by setting the following fields in the JPEG object (cinfo structure):

```
image_width  Width of image, in pixels
image_height Height of image, in pixels
input_components  Number of color channels (samples per pixel)
in_color_space  Color space of source image
```

The image dimensions are, hopefully, obvious. JPEG supports image dimensions of 1 to 64K pixels in either direction. The input color space is typically RGB or grayscale, and input\_components is 3 or 1 accordingly. (See "Special color spaces", later, for more info.) The in\_color\_space field must be assigned one of the J\_COLOR\_SPACE enum constants, typically JCS\_RGB or JCS\_GRAYSCALE.

JPEG has a large number of compression parameters that determine how the image is encoded. Most applications don't need or want to know about all these parameters. You can set all the parameters to reasonable defaults by calling jpeg\_set\_defaults(); then, if there are particular values you want to change, you can do so after that. The "Compression parameter selection" section tells about all the parameters.



You must set `in_color_space` correctly before calling `jpeg_set_defaults()`, because the defaults depend on the source image colorspace. However the other three source image parameters need not be valid until you call `jpeg_start_compress()`. There's no harm in calling `jpeg_set_defaults()` more than once, if that happens to be convenient.

Typical code for a 24-bit RGB source image is

```
cinfo.image_width = Width; /* image width and height, in pixels */
cinfo.image_height = Height;
cinfo.input_components = 3; /* # of color components per pixel */
cinfo.in_color_space = JCS_RGB; /* colorspace of input image */

jpeg_set_defaults(&cinfo);
/* Make optional parameter settings here */
```

#### 4. `jpeg_start_compress(...)`;

After you have established the data destination and set all the necessary source image info and other parameters, call `jpeg_start_compress()` to begin a compression cycle. This will initialize internal state, allocate working storage, and emit the first few bytes of the JPEG datastream header.

Typical code:

```
jpeg_start_compress(&cinfo, TRUE);
```

The "TRUE" parameter ensures that a complete JPEG interchange datastream will be written. This is appropriate in most cases. If you think you might want to use an abbreviated datastream, read the section on abbreviated datastreams, below.

Once you have called `jpeg_start_compress()`, you may not alter any JPEG parameters or other fields of the JPEG object until you have completed the compression cycle.

#### 5. while (scan lines remain to be written)

```
jpeg_write_scanlines(...);
```

Now write all the required image data by calling `jpeg_write_scanlines()` one or more times. You can pass one or more scanlines in each call, up to the total image height. In most applications it is convenient to pass just one or a few scanlines at a time. The expected format for the passed data is discussed under "Data formats", above.

Image data should be written in top-to-bottom scanline order. The JPEG spec contains some weasel wording about how top and bottom are application-defined terms (a curious interpretation of the English language...) but if you want your files to be compatible with everyone else's, you WILL use top-to-bottom order. If the source data must be read in bottom-to-top order, you can use the JPEG library's virtual array mechanism to invert the data efficiently. Examples of this can be found in the sample application cjpeg.

The library maintains a count of the number of scanlines written so far in the `next_scanline` field of the JPEG object. Usually you can just use this variable as the loop counter, so that the loop test looks like `"while (cinfo.next_scanline < cinfo.image_height)"`.

Code for this step depends heavily on the way that you store the source data. `example.c` shows the following code for the case of a full-size 2-D source array containing 3-byte RGB pixels:

```
JSAMPROW row_pointer[1]; /* pointer to a single row */
int row_stride; /* physical row width in buffer */

row_stride = image_width * 3; /* JSAMPLEs per row in image_buffer */

while (cinfo.next_scanline < cinfo.image_height) {
    row_pointer[0] = & image_buffer[cinfo.next_scanline * row_stride];
    jpeg_write_scanlines(&cinfo, row_pointer, 1);
}
```

`jpeg_write_scanlines()` returns the number of scanlines actually written. This will normally be equal to the number passed in, so you can usually ignore the return value. It is different in just two cases:

- \* If you try to write more scanlines than the declared image height, the additional scanlines are ignored.
- \* If you use a suspending data destination manager, output buffer overrun will cause the compressor to return before accepting all the passed lines. This feature is discussed under "I/O suspension", below. The normal `stdio` destination manager will NOT cause this to happen.

In any case, the return value is the same as the change in the value of `next_scanline`.

6. `jpeg_finish_compress(...)`;

After all the image data has been written, call `jpeg_finish_compress()` to complete the compression cycle. This step is ESSENTIAL to ensure that the last bufferload of data is written to the data destination.

`jpeg_finish_compress()` also releases working memory associated with the JPEG object.

Typical code:

```
jpeg_finish_compress(&cinfo);
```

If using the stdio destination manager, don't forget to close the output stdio stream (if necessary) afterwards.

If you have requested a multi-pass operating mode, such as Huffman code optimization, `jpeg_finish_compress()` will perform the additional passes using data buffered by the first pass. In this case `jpeg_finish_compress()` may take quite a while to complete. With the default compression parameters, this will not happen.

It is an error to call `jpeg_finish_compress()` before writing the necessary total number of scanlines. If you wish to abort compression, call `jpeg_abort()` as discussed below.

After completing a compression cycle, you may dispose of the JPEG object as discussed next, or you may use it to compress another image. In that case return to step 2, 3, or 4 as appropriate. If you do not change the destination manager, the new datastream will be written to the same target. If you do not change any JPEG parameters, the new datastream will be written with the same parameters as before. Note that you can change the input image dimensions freely between cycles, but if you change the input colorspace, you should call `jpeg_set_defaults()` to adjust for the new colorspace; and then you'll need to repeat all of step 3.

## 7. Release the JPEG compression object.

When you are done with a JPEG compression object, destroy it by calling `jpeg_destroy_compress()`. This will free all subsidiary memory (regardless of the previous state of the object). Or you can call `jpeg_destroy()`, which works for either compression or decompression objects --- this may be more convenient if you are sharing code between compression and decompression cases. (Actually, these routines are equivalent except for the declared type of the passed pointer. To avoid gripes from ANSI C compilers, `jpeg_destroy()` should be passed a `j_common_ptr`.)

If you allocated the `jpeg_compress_struct` structure from `malloc()`, freeing it is your responsibility --- `jpeg_destroy()` won't. Ditto for the error handler structure.

Typical code:

```
jpeg_destroy_compress(&cinfo);
```

## 8. Aborting.

If you decide to abort a compression cycle before finishing, you can clean up in either of two ways:

\* If you don't need the JPEG object any more, just call `jpeg_destroy_compress()` or `jpeg_destroy()` to release memory. This is legitimate at any point after calling `jpeg_create_compress()` --- in fact, it's safe even if `jpeg_create_compress()` fails.

\* If you want to re-use the JPEG object, call `jpeg_abort_compress()`, or call `jpeg_abort()` which works on both compression and decompression objects. This will return the object to an idle state, releasing any working memory. `jpeg_abort()` is allowed at any time after successful object creation.

Note that cleaning up the data destination, if required, is your responsibility; neither of these routines will call `term_destination()`. (See "Compressed data handling", below, for more about that.)

`jpeg_destroy()` and `jpeg_abort()` are the only safe calls to make on a JPEG object that has reported an error by calling `error_exit` (see "Error handling" for more info). The internal state of such an object is likely to be out of whack. Either of these two routines will return the object to a known state.

### Decompression details

-----

Here we revisit the JPEG decompression outline given in the overview.

#### 1. Allocate and initialize a JPEG decompression object.

This is just like initialization for compression, as discussed above, except that the object is a "struct `jpeg_decompress_struct`" and you call `jpeg_create_decompress()`. Error handling is exactly the same.

Typical code:

```
struct jpeg_decompress_struct cinfo;
struct jpeg_error_mgr jerr;
...
cinfo.err = jpeg_std_error(&jerr);
jpeg_create_decompress(&cinfo);
```

(Both here and in the IJG code, we usually use variable name "cinfo" for both compression and decompression objects.)

2. Specify the source of the compressed data (eg, a file).

As previously mentioned, the JPEG library reads compressed data from a "data source" module. The library includes one data source module which knows how to read from a stdio stream. You can use your own source module if you want to do something else, as discussed later.

If you use the standard source module, you must open the source stdio stream beforehand. Typical code for this step looks like:

```
FILE * infile;
...
if ((infile = fopen(filename, "rb")) == NULL) {
    fprintf(stderr, "can't open %s\n", filename);
    exit(1);
}
jpeg_stdio_src(&cinfo, infile);
```

where the last line invokes the standard source module.

**WARNING:** it is critical that the binary compressed data be read unchanged. On non-Unix systems the stdio library may perform newline translation or otherwise corrupt binary data. To suppress this behavior, you may need to use a "b" option to fopen (as shown above), or use setmode() or another routine to put the stdio stream in binary mode. See cjpeg.c and djpeg.c for code that has been found to work on many systems.

You may not change the data source between calling jpeg\_read\_header() and jpeg\_finish\_decompress(). If you wish to read a series of JPEG images from a single source file, you should repeat the jpeg\_read\_header() to jpeg\_finish\_decompress() sequence without reinitializing either the JPEG object or the data source module; this prevents buffered input data from being discarded.

3. Call jpeg\_read\_header() to obtain image info.

Typical code for this step is just

```
jpeg_read_header(&cinfo, TRUE);
```

This will read the source datastream header markers, up to the beginning of the compressed data proper. On return, the image dimensions and other info have been stored in the JPEG object. The application may wish to consult this information before selecting decompression parameters.

More complex code is necessary if

\* A suspending data source is used --- in that case jpeg\_read\_header()

may return before it has read all the header data. See "I/O suspension", below. The normal stdio source manager will NOT cause this to happen.  
\* Abbreviated JPEG files are to be processed --- see the section on abbreviated datastreams. Standard applications that deal only in interchange JPEG files need not be concerned with this case either.

It is permissible to stop at this point if you just wanted to find out the image dimensions and other header info for a JPEG file. In that case, call `jpeg_destroy()` when you are done with the JPEG object, or call `jpeg_abort()` to return it to an idle state before selecting a new data source and reading another header.

#### 4. Set parameters for decompression.

`jpeg_read_header()` sets appropriate default decompression parameters based on the properties of the image (in particular, its colorspace). However, you may well want to alter these defaults before beginning the decompression. For example, the default is to produce full color output from a color file. If you want colormapped output you must ask for it. Other options allow the returned image to be scaled and allow various speed/quality tradeoffs to be selected. "Decompression parameter selection", below, gives details.

If the defaults are appropriate, nothing need be done at this step.

Note that all default values are set by each call to `jpeg_read_header()`. If you reuse a decompression object, you cannot expect your parameter settings to be preserved across cycles, as you can for compression. You must set desired parameter values each time.

#### 5. `jpeg_start_decompress(...)`;

Once the parameter values are satisfactory, call `jpeg_start_decompress()` to begin decompression. This will initialize internal state, allocate working memory, and prepare for returning data.

Typical code is just

```
jpeg_start_decompress(&cinfo);
```

If you have requested a multi-pass operating mode, such as 2-pass color quantization, `jpeg_start_decompress()` will do everything needed before data output can begin. In this case `jpeg_start_decompress()` may take quite a while to complete. With a single-scan (non progressive) JPEG file and default decompression parameters, this will not happen; `jpeg_start_decompress()` will return quickly.

After this call, the final output image dimensions, including any requested scaling, are available in the JPEG object; so is the selected colormap, if colormapped output has been requested. Useful fields include

output\_width image width and height, as scaled  
output\_height  
out\_color\_components # of color components in out\_color\_space  
output\_components # of color components returned per pixel  
colormap the selected colormap, if any  
actual\_number\_of\_colors number of entries in colormap

output\_components is 1 (a colormap index) when quantizing colors; otherwise it equals out\_color\_components. It is the number of JSAMPLE values that will be emitted per pixel in the output arrays.

Typically you will need to allocate data buffers to hold the incoming image. You will need output\_width \* output\_components JSAMPLEs per scanline in your output buffer, and a total of output\_height scanlines will be returned.

Note: if you are using the JPEG library's internal memory manager to allocate data buffers (as djpeg does), then the manager's protocol requires that you request large buffers \*before\* calling jpeg\_start\_decompress(). This is a little tricky since the output\_XXX fields are not normally valid then. You can make them valid by calling jpeg\_calc\_output\_dimensions() after setting the relevant parameters (scaling, output color space, and quantization flag).

```
6. while (scan lines remain to be read)
    jpeg_read_scanlines(...);
```

Now you can read the decompressed image data by calling jpeg\_read\_scanlines() one or more times. At each call, you pass in the maximum number of scanlines to be read (ie, the height of your working buffer); jpeg\_read\_scanlines() will return up to that many lines. The return value is the number of lines actually read. The format of the returned data is discussed under "Data formats", above. Don't forget that grayscale and color JPEGs will return different data formats!

Image data is returned in top-to-bottom scanline order. If you must write out the image in bottom-to-top order, you can use the JPEG library's virtual array mechanism to invert the data efficiently. Examples of this can be found in the sample application djpeg.

The library maintains a count of the number of scanlines returned so far in the output\_scanline field of the JPEG object. Usually you can just use this variable as the loop counter, so that the loop test looks like "while (cinfo.output\_scanline < cinfo.output\_height)". (Note that the test should NOT be against image\_height, unless you never use scaling. The

image\_height field is the height of the original unscaled image.)  
The return value always equals the change in the value of output\_scanline.

If you don't use a suspending data source, it is safe to assume that jpeg\_read\_scanlines() reads at least one scanline per call, until the bottom of the image has been reached.

If you use a buffer larger than one scanline, it is NOT safe to assume that jpeg\_read\_scanlines() fills it. (The current implementation returns only a few scanlines per call, no matter how large a buffer you pass.) So you must always provide a loop that calls jpeg\_read\_scanlines() repeatedly until the whole image has been read.

#### 7. jpeg\_finish\_decompress(...);

After all the image data has been read, call jpeg\_finish\_decompress() to complete the decompression cycle. This causes working memory associated with the JPEG object to be released.

Typical code:

```
jpeg_finish_decompress(&cinfo);
```

If using the stdio source manager, don't forget to close the source stdio stream if necessary.

It is an error to call jpeg\_finish\_decompress() before reading the correct total number of scanlines. If you wish to abort decompression, call jpeg\_abort() as discussed below.

After completing a decompression cycle, you may dispose of the JPEG object as discussed next, or you may use it to decompress another image. In that case return to step 2 or 3 as appropriate. If you do not change the source manager, the next image will be read from the same source.

#### 8. Release the JPEG decompression object.

When you are done with a JPEG decompression object, destroy it by calling jpeg\_destroy\_decompress() or jpeg\_destroy(). The previous discussion of destroying compression objects applies here too.

Typical code:

```
jpeg_destroy_decompress(&cinfo);
```



## 9. Aborting.

You can abort a decompression cycle by calling `jpeg_destroy_decompress()` or `jpeg_destroy()` if you don't need the JPEG object any more, or `jpeg_abort_decompress()` or `jpeg_abort()` if you want to reuse the object. The previous discussion of aborting compression cycles applies here too.

Mechanics of usage: include files, linking, etc

-----

Applications using the JPEG library should include the header file `jpeglib.h` to obtain declarations of data types and routines. Before including `jpeglib.h`, include system headers that define at least the typedefs `FILE` and `size_t`. On ANSI-conforming systems, including `<stdio.h>` is sufficient; on older Unix systems, you may need `<sys/types.h>` to define `size_t`.

If the application needs to refer to individual JPEG library error codes, also include `jerror.h` to define those symbols.

`jpeglib.h` indirectly includes the files `jconfig.h` and `jmorecfg.h`. If you are installing the JPEG header files in a system directory, you will want to install all four files: `jpeglib.h`, `jerror.h`, `jconfig.h`, `jmorecfg.h`.

The most convenient way to include the JPEG code into your executable program is to prepare a library file ("`libjpeg.a`", or a corresponding name on non-Unix machines) and reference it at your link step. If you use only half of the library (only compression or only decompression), only that much code will be included from the library, unless your linker is hopelessly brain-damaged. The supplied makefiles build `libjpeg.a` automatically (see `install.txt`).

While you can build the JPEG library as a shared library if the whim strikes you, we don't really recommend it. The trouble with shared libraries is that at some point you'll probably try to substitute a new version of the library without recompiling the calling applications. That generally doesn't work because the parameter struct declarations usually change with each new version. In other words, the library's API is *\*not\** guaranteed binary compatible across versions; we only try to ensure source-code compatibility. (In hindsight, it might have been smarter to hide the parameter structs from applications and introduce a ton of access functions instead. Too late now, however.)

On some systems your application may need to set up a signal handler to ensure that temporary files are deleted if the program is interrupted. This is most critical if you are on MS-DOS and use the `jmemdos.c` memory manager back end; it will try to grab extended memory for temp files, and that space will NOT be freed automatically. See `cjpeg.c` or `djpeg.c` for an example signal handler.

It may be worth pointing out that the core JPEG library does not actually require the stdio library: only the default source/destination managers and error handler need it. You can use the library in a stdio-less environment if you replace those modules and use `jmemnobs.c` (or another memory manager of your own devising). More info about the minimum system library requirements may be found in `jinclude.h`.

## ADVANCED FEATURES

=====

### Compression parameter selection

-----

This section describes all the optional parameters you can set for JPEG compression, as well as the "helper" routines provided to assist in this task. Proper setting of some parameters requires detailed understanding of the JPEG standard; if you don't know what a parameter is for, it's best not to mess with it! See REFERENCES in the README file for pointers to more info about JPEG.

It's a good idea to call `jpeg_set_defaults()` first, even if you plan to set all the parameters; that way your code is more likely to work with future JPEG libraries that have additional parameters. For the same reason, we recommend you use a helper routine where one is provided, in preference to twiddling `cinfo` fields directly.

The helper routines are:

`jpeg_set_defaults (j_compress_ptr cinfo)`

This routine sets all JPEG parameters to reasonable defaults, using only the input image's color space (field `in_color_space`, which must already be set in `cinfo`). Many applications will only need to use this routine and perhaps `jpeg_set_quality()`.

`jpeg_set_colorspace (j_compress_ptr cinfo, J_COLOR_SPACE colorspace)`

Sets the JPEG file's colorspace (field `jpeg_color_space`) as specified, and sets other color-space-dependent parameters appropriately. See "Special color spaces", below, before using this. A large number of parameters, including all per-component parameters, are set by this routine; if you want to twiddle individual parameters you should call `jpeg_set_colorspace()` before rather than after.

`jpeg_default_colorspace (j_compress_ptr cinfo)`

Selects an appropriate JPEG colorspace based on `cinfo->in_color_space`, and calls `jpeg_set_colorspace()`. This is actually a subroutine of `jpeg_set_defaults()`. It's broken out in case you want to change just the colorspace-dependent JPEG parameters.

`jpeg_set_quality(j_compress_ptr cinfo, int quality, boolean force_baseline)`

Constructs JPEG quantization tables appropriate for the indicated quality setting. The quality value is expressed on the 0..100 scale recommended by IJG (cjpeg's "-quality" switch uses this routine). Note that the exact mapping from quality values to tables may change in future IJG releases as more is learned about DCT quantization. If the `force_baseline` parameter is `TRUE`, then the quantization table entries are constrained to the range 1..255 for full JPEG baseline compatibility. In the current implementation, this only makes a difference for quality settings below 25, and it effectively prevents very small/low quality files from being generated. The IJG decoder is capable of reading the non-baseline files generated at low quality settings when `force_baseline` is `FALSE`, but other decoders may not be.

`jpeg_set_linear_quality(j_compress_ptr cinfo, int scale_factor, boolean force_baseline)`

Same as `jpeg_set_quality()` except that the generated tables are the sample tables given in the JPEC spec section K.1, multiplied by the specified scale factor (which is expressed as a percentage; thus `scale_factor = 100` reproduces the spec's tables). Note that larger scale factors give lower quality. This entry point is useful for conforming to the Adobe PostScript DCT conventions, but we do not recommend linear scaling as a user-visible quality scale otherwise. `force_baseline` again constrains the computed table entries to 1..255.

`int jpeg_quality_scaling(int quality)`

Converts a value on the IJG-recommended quality scale to a linear scaling percentage. Note that this routine may change or go away in future releases --- IJG may choose to adopt a scaling method that can't be expressed as a simple scalar multiplier, in which case the premise of this routine collapses. Caveat user.

`jpeg_default_qtables(j_compress_ptr cinfo, boolean force_baseline)`

Set default quantization tables with linear `q_scale_factor[]` values (see below).

`jpeg_add_quant_table(j_compress_ptr cinfo, int which_tbl, const unsigned int *basic_table, int scale_factor, boolean force_baseline)`

Allows an arbitrary quantization table to be created. `which_tbl` indicates which table slot to fill. `basic_table` points to an array of 64 unsigned ints given in normal array order. These values are multiplied by `scale_factor/100` and then clamped to the range 1..65535 (or to 1..255 if `force_baseline` is `TRUE`).

CAUTION: prior to library version 6a, `jpeg_add_quant_table` expected the basic table to be given in JPEG zigzag order. If you need to write code that works with either older or newer versions of this

routine, you must check the library version number. Something like  
"#if JPEG\_LIB\_VERSION >= 61" is the right test.

jpeg\_simple\_progression (j\_compress\_ptr cinfo)

Generates a default scan script for writing a progressive-JPEG file.

This is the recommended method of creating a progressive file,  
unless you want to make a custom scan sequence. You must ensure that  
the JPEG color space is set correctly before calling this routine.

Compression parameters (cinfo fields) include:

boolean arith\_code

If TRUE, use arithmetic coding.

If FALSE, use Huffman coding.

int block\_size

Set DCT block size. All N from 1 to 16 are possible.

Default is 8 (baseline format).

Larger values produce higher compression,  
smaller values produce higher quality.

An exact DCT stage is possible with 1 or 2.

With the default quality of 75 and default Luminance qtable  
the DCT+Quantization stage is lossless for value 1.

Note that values other than 8 require a SmartScale capable decoder,  
introduced with IJG JPEG 8. Setting the block\_size parameter for  
compression works with version 8c and later.

J\_DCT\_METHOD dct\_method

Selects the algorithm used for the DCT step. Choices are:

JDCT\_ISLOW: slow but accurate integer algorithm

JDCT\_IFAST: faster, less accurate integer method

JDCT\_FLOAT: floating-point method

JDCT\_DEFAULT: default method (normally JDCT\_ISLOW)

JDCT\_FASTEST: fastest method (normally JDCT\_IFAST)

The FLOAT method is very slightly more accurate than the ISLOW method,  
but may give different results on different machines due to varying  
roundoff behavior. The integer methods should give the same results  
on all machines. On machines with sufficiently fast FP hardware, the  
floating-point method may also be the fastest. The IFAST method is  
considerably less accurate than the other two; its use is not  
recommended if high quality is a concern. JDCT\_DEFAULT and  
JDCT\_FASTEST are macros configurable by each installation.

unsigned int scale\_num, scale\_denom

Scale the image by the fraction scale\_num/scale\_denom. Default is

1/1, or no scaling. Currently, the supported scaling ratios are

M/N with all N from 1 to 16, where M is the destination DCT size,

which is 8 by default (see `block_size` parameter above).  
(The library design allows for arbitrary scaling ratios but this is not likely to be implemented any time soon.)

`J_COLOR_SPACE` `jpeg_color_space`

`int num_components`

The JPEG color space and corresponding number of components; see "Special color spaces", below, for more info. We recommend using `jpeg_set_colorspace()` if you want to change these.

`J_COLOR_TRANSFORM` `color_transform`

Internal color transform identifier, writes LSE marker if nonzero (requires decoder with inverse color transform support, introduced with IJG JPEG 9).

Two values are currently possible: `JCT_NONE` and `JCT_SUBTRACT_GREEN`.

Set this value for lossless RGB application \*before\* calling `jpeg_set_colorspace()`, because entropy table assignment in `jpeg_set_colorspace()` depends on `color_transform`.

`boolean optimize_coding`

`TRUE` causes the compressor to compute optimal Huffman coding tables for the image. This requires an extra pass over the data and therefore costs a good deal of space and time. The default is `FALSE`, which tells the compressor to use the supplied or default Huffman tables. In most cases optimal tables save only a few percent of file size compared to the default tables. Note that when this is `TRUE`, you need not supply Huffman tables at all, and any you do supply will be overwritten.

`unsigned int restart_interval`

`int restart_in_rows`

To emit restart markers in the JPEG file, set one of these nonzero. Set `restart_interval` to specify the exact interval in MCU blocks. Set `restart_in_rows` to specify the interval in MCU rows. (If `restart_in_rows` is not 0, then `restart_interval` is set after the image width in MCUs is computed.) Defaults are zero (no restarts). One restart marker per MCU row is often a good choice.  
NOTE: the overhead of restart markers is higher in grayscale JPEG files than in color files, and MUCH higher in progressive JPEGs. If you use restarts, you may want to use larger intervals in those cases.

`const jpeg_scan_info * scan_info`

`int num_scans`

By default, `scan_info` is `NULL`; this causes the compressor to write a single-scan sequential JPEG file. If not `NULL`, `scan_info` points to an array of scan definition records of length `num_scans`. The compressor will then write a JPEG file having one scan for each scan

definition record. This is used to generate noninterleaved or progressive JPEG files. The library checks that the scan array defines a valid JPEG scan sequence. (`jpeg_simple_progression` creates a suitable scan definition array for progressive JPEG.) This is discussed further under "Progressive JPEG support".

boolean `do_fancy_downsampling`

If TRUE, use direct DCT scaling with DCT size > 8 for downsampling of chroma components.

If FALSE, use only DCT size <= 8 and simple separate downsampling.

Default is TRUE.

For better image stability in multiple generation compression cycles it is preferable that this value matches the corresponding `do_fancy_upsampling` value in decompression.

int `smoothing_factor`

If non-zero, the input image is smoothed; the value should be 1 for minimal smoothing to 100 for maximum smoothing. Consult `jcsample.c` for details of the smoothing algorithm. The default is zero.

boolean `write_JFIF_header`

If TRUE, a JFIF APP0 marker is emitted. `jpeg_set_defaults()` and `jpeg_set_colorspace()` set this TRUE if a JFIF-legal JPEG color space (ie, YCbCr or grayscale) is selected, otherwise FALSE.

UINT8 `JFIF_major_version`

UINT8 `JFIF_minor_version`

The version number to be written into the JFIF marker.

`jpeg_set_defaults()` initializes the version to 1.01 (major=minor=1).

You should set it to 1.02 (major=1, minor=2) if you plan to write any JFIF 1.02 extension markers.

UINT8 `density_unit`

UINT16 `X_density`

UINT16 `Y_density`

The resolution information to be written into the JFIF marker;

not used otherwise. `density_unit` may be 0 for unknown,

1 for dots/inch, or 2 for dots/cm. The default values are 0,1,1

indicating square pixels of unknown size.

boolean `write_Adobe_marker`

If TRUE, an Adobe APP14 marker is emitted. `jpeg_set_defaults()` and `jpeg_set_colorspace()` set this TRUE if JPEG color space RGB, CMYK,

or YCCK is selected, otherwise FALSE. It is generally a bad idea to set both `write_JFIF_header` and `write_Adobe_marker`. In fact,

you probably shouldn't change the default settings at all --- the default behavior ensures that the JPEG file's color space can be

recognized by the decoder.

JQUANT\_TBL \* quant\_tbl\_ptrs[NUM\_QUANT\_TBLS]  
Pointers to coefficient quantization tables, one per table slot, or NULL if no table is defined for a slot. Usually these should be set via one of the above helper routines; jpeg\_add\_quant\_table() is general enough to define any quantization table. The other routines will set up table slot 0 for luminance quality and table slot 1 for chrominance.

int q\_scale\_factor[NUM\_QUANT\_TBLS]  
Linear quantization scaling factors (percentage, initialized 100) for use with jpeg\_default\_qtables().  
See rdswitch.c and cjpeg.c for an example of usage.  
Note that the q\_scale\_factor[] fields are the "linear" scales, so you have to convert from user-defined ratings via jpeg\_quality\_scaling(). Here is an example code which corresponds to cjpeg -quality 90,70:

```
jpeg_set_defaults(cinfo);  
  
/* Set luminance quality 90. */  
cinfo->q_scale_factor[0] = jpeg_quality_scaling(90);  
/* Set chrominance quality 70. */  
cinfo->q_scale_factor[1] = jpeg_quality_scaling(70);  
  
jpeg_default_qtables(cinfo, force_baseline);
```

CAUTION: You must also set 1x1 subsampling for efficient separate color quality selection, since the default value used by library is 2x2:

```
cinfo->comp_info[0].v_samp_factor = 1;  
cinfo->comp_info[0].h_samp_factor = 1;
```

JHUFF\_TBL \* dc\_huff\_tbl\_ptrs[NUM\_HUFF\_TBLS]  
JHUFF\_TBL \* ac\_huff\_tbl\_ptrs[NUM\_HUFF\_TBLS]  
Pointers to Huffman coding tables, one per table slot, or NULL if no table is defined for a slot. Slots 0 and 1 are filled with the JPEG sample tables by jpeg\_set\_defaults(). If you need to allocate more table structures, jpeg\_alloc\_huff\_table() may be used.  
Note that optimal Huffman tables can be computed for an image by setting optimize\_coding, as discussed above; there's seldom any need to mess with providing your own Huffman tables.

The actual dimensions of the JPEG image that will be written to the file are given by the following fields. These are computed from the input image dimensions and the compression parameters by jpeg\_start\_compress(). You can also call jpeg\_calc\_jpeg\_dimensions() to obtain the values that will result

from the current parameter settings. This can be useful if you are trying to pick a scaling ratio that will get close to a desired target size.

JDIMENSION jpeg\_width Actual dimensions of output image.

JDIMENSION jpeg\_height

Per-component parameters are stored in the struct `cinfo.comp_info[i]` for component number `i`. Note that components here refer to components of the JPEG color space, \*not\* the source image color space. A suitably large `comp_info[]` array is allocated by `jpeg_set_defaults()`; if you choose not to use that routine, it's up to you to allocate the array.

int component\_id

The one-byte identifier code to be recorded in the JPEG file for this component. For the standard color spaces, we recommend you leave the default values alone.

int h\_samp\_factor

int v\_samp\_factor

Horizontal and vertical sampling factors for the component; must be 1..4 according to the JPEG standard. Note that larger sampling factors indicate a higher-resolution component; many people find this behavior quite unintuitive. The default values are 2,2 for luminance components and 1,1 for chrominance components, except for grayscale where 1,1 is used.

int quant\_tbl\_no

Quantization table number for component. The default value is 0 for luminance components and 1 for chrominance components.

int dc\_tbl\_no

int ac\_tbl\_no

DC and AC entropy coding table numbers. The default values are 0 for luminance components and 1 for chrominance components.

int component\_index

Must equal the component's index in `comp_info[]`. (Beginning in release v6, the compressor library will fill this in automatically; you don't have to.)

Decompression parameter selection

-----

Decompression parameter selection is somewhat simpler than compression parameter selection, since all of the JPEG internal parameters are recorded in the source file and need not be supplied by the application.



(Unless you are working with abbreviated files, in which case see "Abbreviated datastreams", below.) Decompression parameters control the postprocessing done on the image to deliver it in a format suitable for the application's use. Many of the parameters control speed/quality tradeoffs, in which faster decompression may be obtained at the price of a poorer-quality image. The defaults select the highest quality (slowest) processing.

The following fields in the JPEG object are set by `jpeg_read_header()` and may be useful to the application in choosing decompression parameters:

`JDIMENSION image_width` Width and height of image  
`JDIMENSION image_height`  
`int num_components` Number of color components  
`J_COLOR_SPACE jpeg_color_space` Colorspace of image  
`boolean saw_JFIF_marker` TRUE if a JFIF APP0 marker was seen  
`UINT8 JFIF_major_version` Version information from JFIF marker  
`UINT8 JFIF_minor_version`  
`UINT8 density_unit` Resolution data from JFIF marker  
`UINT16 X_density`  
`UINT16 Y_density`  
`boolean saw_Adobe_marker` TRUE if an Adobe APP14 marker was seen  
`UINT8 Adobe_transform` Color transform code from Adobe marker

The JPEG color space, unfortunately, is something of a guess since the JPEG standard proper does not provide a way to record it. In practice most files adhere to the JFIF or Adobe conventions, and the decoder will recognize these correctly. See "Special color spaces", below, for more info.

The decompression parameters that determine the basic properties of the returned image are:

`J_COLOR_SPACE out_color_space`  
Output color space. `jpeg_read_header()` sets an appropriate default based on `jpeg_color_space`; typically it will be RGB or grayscale. The application can change this field to request output in a different colorspace. For example, set it to `JCS_GRAYSCALE` to get grayscale output from a color file. (This is useful for previewing: grayscale output is faster than full color since the color components need not be processed.) Note that not all possible color space transforms are currently implemented; you may need to extend `jdcolor.c` if you want an unusual conversion.

`unsigned int scale_num, scale_denom`  
Scale the image by the fraction `scale_num/scale_denom`. Currently, the supported scaling ratios are  $M/N$  with all  $M$  from 1 to 16, where  $N$  is the source DCT size, which is 8 for baseline JPEG. (The library

design allows for arbitrary scaling ratios but this is not likely to be implemented any time soon.) The values are initialized by `jpeg_read_header()` with the source DCT size. For baseline JPEG this is 8/8. If you change only the `scale_num` value while leaving the other unchanged, then this specifies the DCT scaled size to be applied on the given input. For baseline JPEG this is equivalent to M/8 scaling, since the source DCT size for baseline JPEG is 8. Smaller scaling ratios permit significantly faster decoding since fewer pixels need be processed and a simpler IDCT method can be used.

boolean `quantize_colors`

If set TRUE, colormapped output will be delivered. Default is FALSE, meaning that full-color output will be delivered.

The next three parameters are relevant only if `quantize_colors` is TRUE.

int `desired_number_of_colors`

Maximum number of colors to use in generating a library-supplied color map (the actual number of colors is returned in a different field).

Default 256. Ignored when the application supplies its own color map.

boolean `two_pass_quantize`

If TRUE, an extra pass over the image is made to select a custom color map for the image. This usually looks a lot better than the one-size-fits-all colormap that is used otherwise. Default is TRUE. Ignored when the application supplies its own color map.

J\_DITHER\_MODE `dither_mode`

Selects color dithering method. Supported values are:

JDITHER\_NONE no dithering: fast, very low quality

JDITHER\_ORDERED ordered dither: moderate speed and quality

JDITHER\_FS Floyd-Steinberg dither: slow, high quality

Default is JDITHER\_FS. (At present, ordered dither is implemented only in the single-pass, standard-colormap case. If you ask for ordered dither when `two_pass_quantize` is TRUE or when you supply an external color map, you'll get F-S dithering.)

When `quantize_colors` is TRUE, the target color map is described by the next two fields. `colormap` is set to NULL by `jpeg_read_header()`. The application can supply a color map by setting `colormap` non-NULL and setting `actual_number_of_colors` to the map size. Otherwise, `jpeg_start_decompress()` selects a suitable color map and sets these two fields itself.

[Implementation restriction: at present, an externally supplied colormap is only accepted for 3-component output color spaces.]

JSAMPARRAY `colormap`

The color map, represented as a 2-D pixel array of `out_color_components` rows and `actual_number_of_colors` columns. Ignored if not quantizing.

CAUTION: if the JPEG library creates its own colormap, the storage pointed to by this field is released by `jpeg_finish_decompress()`. Copy the colormap somewhere else first, if you want to save it.

`int actual_number_of_colors`

The number of colors in the color map.

Additional decompression parameters that the application may set include:

`J_DCT_METHOD dct_method`

Selects the algorithm used for the DCT step. Choices are the same as described above for compression.

`boolean do_fancy_upsampling`

If TRUE, use direct DCT scaling with DCT size > 8 for upsampling of chroma components.

If FALSE, use only DCT size <= 8 and simple separate upsampling. Default is TRUE.

For better image stability in multiple generation compression cycles it is preferable that this value matches the corresponding `do_fancy_downsampling` value in compression.

`boolean do_block_smoothing`

If TRUE, interblock smoothing is applied in early stages of decoding progressive JPEG files; if FALSE, not. Default is TRUE. Early progression stages look "fuzzy" with smoothing, "blocky" without. In any case, block smoothing ceases to be applied after the first few AC coefficients are known to full accuracy, so it is relevant only when using buffered-image mode for progressive images.

`boolean enable_1pass_quant`

`boolean enable_external_quant`

`boolean enable_2pass_quant`

These are significant only in buffered-image mode, which is described in its own section below.

The output image dimensions are given by the following fields. These are computed from the source image dimensions and the decompression parameters by `jpeg_start_decompress()`. You can also call `jpeg_calc_output_dimensions()` to obtain the values that will result from the current parameter settings. This can be useful if you are trying to pick a scaling ratio that will get close to a desired target size. It's also important if you are using the JPEG library's memory manager to allocate output buffer space, because you are supposed to request such buffers *before* `jpeg_start_decompress()`.

`JDIMENSION output_width` Actual dimensions of output image.

`JDIMENSION output_height`

int out\_color\_components Number of color components in out\_color\_space.

int output\_components Number of color components returned.

int rec\_outbuf\_height Recommended height of scanline buffer.

When quantizing colors, output\_components is 1, indicating a single color map index per pixel. Otherwise it equals out\_color\_components. The output arrays are required to be output\_width \* output\_components JSAMPLEs wide.

rec\_outbuf\_height is the recommended minimum height (in scanlines) of the buffer passed to jpeg\_read\_scanlines(). If the buffer is smaller, the library will still work, but time will be wasted due to unnecessary data copying. In high-quality modes, rec\_outbuf\_height is always 1, but some faster, lower-quality modes set it to larger values (typically 2 to 4).

If you are going to ask for a high-speed processing mode, you may as well go to the trouble of honoring rec\_outbuf\_height so as to avoid data copying. (An output buffer larger than rec\_outbuf\_height lines is OK, but won't provide any material speed improvement over that height.)

#### Special color spaces

-----

The JPEG standard itself is "color blind" and doesn't specify any particular color space. It is customary to convert color data to a luminance/chrominance color space before compressing, since this permits greater compression. The existing JPEG file interchange format standards specify YCbCr or GRAYSCALE data (JFIF version 1), GRAYSCALE, RGB, YCbCr, CMYK, or YCCK (Adobe), or BG\_RGB or BG\_YCC (big gamut color spaces, JFIF version 2). For special applications such as multispectral images, other color spaces can be used, but it must be understood that such files will be unportable.

The JPEG library can handle the most common colorspace conversions (namely RGB  $\Leftrightarrow$  YCbCr and CMYK  $\Leftrightarrow$  YCCK). It can also deal with data of an unknown color space, passing it through without conversion. If you deal extensively with an unusual color space, you can easily extend the library to understand additional color spaces and perform appropriate conversions.

For compression, the source data's color space is specified by field in\_color\_space. This is transformed to the JPEG file's color space given by jpeg\_color\_space. jpeg\_set\_defaults() chooses a reasonable JPEG color space depending on in\_color\_space, but you can override this by calling jpeg\_set\_colorspace(). Of course you must select a supported transformation. jccolor.c currently supports the following transformations:

RGB => YCbCr

RGB => GRAYSCALE

RGB => BG\_YCC

YCbCr => GRAYSCALE

YCbCr => BG\_YCC

CMYK => YCCK

plus the null transforms: GRAYSCALE => GRAYSCALE, RGB => RGB,  
BG\_RGB => BG\_RGB, YCbCr => YCbCr, BG\_YCC => BG\_YCC, CMYK => CMYK,  
YCCK => YCCK, and UNKNOWN => UNKNOWN.

The file interchange format standards (JFIF and Adobe) specify APPn markers that indicate the color space of the JPEG file. It is important to ensure that these are written correctly, or omitted if the JPEG file's color space is not one of the ones supported by the interchange standards.

jpeg\_set\_colorspace() will set the compression parameters to include or omit the APPn markers properly, so long as it is told the truth about the JPEG color space. For example, if you are writing some random 3-component color space without conversion, don't try to fake out the library by setting in\_color\_space and jpeg\_color\_space to JCS\_YCbCr; use JCS\_UNKNOWN. You may want to write an APPn marker of your own devising to identify the colorspace --- see "Special markers", below.

When told that the color space is UNKNOWN, the library will default to using luminance-quality compression parameters for all color components. You may well want to change these parameters. See the source code for jpeg\_set\_colorspace(), in jparam.c, for details.

For decompression, the JPEG file's color space is given in jpeg\_color\_space, and this is transformed to the output color space out\_color\_space.

jpeg\_read\_header's setting of jpeg\_color\_space can be relied on if the file conforms to JFIF or Adobe conventions, but otherwise it is no better than a guess. If you know the JPEG file's color space for certain, you can override jpeg\_read\_header's guess by setting jpeg\_color\_space. jpeg\_read\_header also selects a default output color space based on (its guess of) jpeg\_color\_space; set out\_color\_space to override this. Again, you must select a supported transformation. jdcolor.c currently supports

YCbCr => RGB

YCbCr => GRAYSCALE

BG\_YCC => RGB

BG\_YCC => GRAYSCALE

RGB => GRAYSCALE

GRAYSCALE => RGB

YCCK => CMYK

as well as the null transforms. (Since GRAYSCALE=>RGB is provided, an application can force grayscale JPEGs to look like color JPEGs if it only wants to handle one case.)

The two-pass color quantizer, jquant2.c, is specialized to handle RGB data (it weights distances appropriately for RGB colors). You'll need to modify the code if you want to use it for non-RGB output color spaces. Note that jquant2.c is used to map to an application-supplied colormap as well as for the normal two-pass colormap selection process.

CAUTION: it appears that Adobe Photoshop writes inverted data in CMYK JPEG files: 0 represents 100% ink coverage, rather than 0% ink as you'd expect. This is arguably a bug in Photoshop, but if you need to work with Photoshop CMYK files, you will have to deal with it in your application. We cannot "fix" this in the library by inverting the data during the CMYK<=>YCKK transform, because that would break other applications, notably Ghostscript. Photoshop versions prior to 3.0 write EPS files containing JPEG-encoded CMYK data in the same inverted-YCKK representation used in bare JPEG files, but the surrounding PostScript code performs an inversion using the PS image operator. I am told that Photoshop 3.0 will write uninverted YCKK in EPS/JPEG files, and will omit the PS-level inversion. (But the data polarity used in bare JPEG files will not change in 3.0.) In either case, the JPEG library must not invert the data itself, or else Ghostscript would read these EPS files incorrectly.

#### Error handling

-----

When the default error handler is used, any error detected inside the JPEG routines will cause a message to be printed on stderr, followed by exit(). You can supply your own error handling routines to override this behavior and to control the treatment of nonfatal warnings and trace/debug messages. The file example.c illustrates the most common case, which is to have the application regain control after an error rather than exiting.

The JPEG library never writes any message directly; it always goes through the error handling routines. Three classes of messages are recognized:

- \* Fatal errors: the library cannot continue.
- \* Warnings: the library can continue, but the data is corrupt, and a damaged output image is likely to result.
- \* Trace/informational messages. These come with a trace level indicating the importance of the message; you can control the verbosity of the program by adjusting the maximum trace level that will be displayed.

You may, if you wish, simply replace the entire JPEG error handling module (jerror.c) with your own code. However, you can avoid code duplication by only replacing some of the routines depending on the behavior you need. This is accomplished by calling jpeg\_std\_error() as usual, but then overriding some of the method pointers in the jpeg\_error\_mgr struct, as illustrated by example.c.

All of the error handling routines will receive a pointer to the JPEG object (a j\_common\_ptr which points to either a jpeg\_compress\_struct or a jpeg\_decompress\_struct; if you need to tell which, test the is\_decompressor field). This struct includes a pointer to the error manager struct in its "err" field. Frequently, custom error handler routines will need to access additional data which is not known to the JPEG library or the standard error

handler. The most convenient way to do this is to embed either the JPEG object or the `jpeg_error_mgr` struct in a larger structure that contains additional fields; then casting the passed pointer provides access to the additional fields. Again, see `example.c` for one way to do it. (Beginning with IJG version 6b, there is also a void pointer "client\_data" in each JPEG object, which the application can also use to find related data. The library does not touch client\_data at all.)

The individual methods that you might wish to override are:

`error_exit (j_common_ptr cinfo)`

Receives control for a fatal error. Information sufficient to generate the error message has been stored in `cinfo->err`; call `output_message` to display it. Control must NOT return to the caller; generally this routine will `exit()` or `longjmp()` somewhere. Typically you would override this routine to get rid of the `exit()` default behavior. Note that if you continue processing, you should clean up the JPEG object with `jpeg_abort()` or `jpeg_destroy()`.

`output_message (j_common_ptr cinfo)`

Actual output of any JPEG message. Override this to send messages somewhere other than `stderr`. Note that this method does not know how to generate a message, only where to send it.

`format_message (j_common_ptr cinfo, char * buffer)`

Constructs a readable error message string based on the error info stored in `cinfo->err`. This method is called by `output_message`. Few applications should need to override this method. One possible reason for doing so is to implement dynamic switching of error message language.

`emit_message (j_common_ptr cinfo, int msg_level)`

Decide whether or not to emit a warning or trace message; if so, calls `output_message`. The main reason for overriding this method would be to abort on warnings. `msg_level` is -1 for warnings, 0 and up for trace messages.

Only `error_exit()` and `emit_message()` are called from the rest of the JPEG library; the other two are internal to the error handler.

The actual message texts are stored in an array of strings which is pointed to by the field `err->jpeg_message_table`. The messages are numbered from 0 to `err->last_jpeg_message`, and it is these code numbers that are used in the JPEG library code. You could replace the message texts (for instance, with messages in French or German) by changing the message table pointer. See `error.h` for the default texts. CAUTION: this table will almost certainly change or grow from one library version to the next.

It may be useful for an application to add its own message texts that are handled by the same mechanism. The error handler supports a second "add-on" message table for this purpose. To define an addon table, set the pointer `err->addon_message_table` and the message numbers `err->first_addon_message` and `err->last_addon_message`. If you number the addon messages beginning at 1000 or so, you won't have to worry about conflicts with the library's built-in messages. See the sample applications `cjpeg/djpeg` for an example of using addon messages (the addon messages are defined in `cderror.h`).

Actual invocation of the error handler is done via macros defined in `jerror.h`:

`ERREXITn(...)` for fatal errors

`WARNMSn(...)` for corrupt-data warnings

`TRACEMSn(...)` for trace and informational messages.

These macros store the message code and any additional parameters into the error handler struct, then invoke the `error_exit()` or `emit_message()` method.

The variants of each macro are for varying numbers of additional parameters.

The additional parameters are inserted into the generated message using standard `printf()` format codes.

See `jerror.h` and `jerror.c` for further details.

#### Compressed data handling (source and destination managers)

-----

The JPEG compression library sends its compressed data to a "destination manager" module. The default destination manager just writes the data to a memory buffer or to a stdio stream, but you can provide your own manager to do something else. Similarly, the decompression library calls a "source manager" to obtain the compressed data; you can provide your own source manager if you want the data to come from somewhere other than a memory buffer or a stdio stream.

In both cases, compressed data is processed a bufferload at a time: the destination or source manager provides a work buffer, and the library invokes the manager only when the buffer is filled or emptied. (You could define a one-character buffer to force the manager to be invoked for each byte, but that would be rather inefficient.) The buffer's size and location are controlled by the manager, not by the library. For example, the memory source manager just makes the buffer pointer and length point to the original data in memory. In this case the buffer-reload procedure will be invoked only if the decompressor ran off the end of the datastream, which would indicate an erroneous datastream.

The work buffer is defined as an array of datatype `JOCTET`, which is generally "char" or "unsigned char". On a machine where char is not exactly 8 bits wide, you must define `JOCTET` as a wider data type and then modify the data source and destination modules to transcribe the work arrays into 8-bit units



on external storage.

A data destination manager struct contains a pointer and count defining the next byte to write in the work buffer and the remaining free space:

```
JOCTET * next_output_byte; /* => next byte to write in buffer */
size_t free_in_buffer;    /* # of byte spaces remaining in buffer */
```

The library increments the pointer and decrements the count until the buffer is filled. The manager's `empty_output_buffer` method must reset the pointer and count. The manager is expected to remember the buffer's starting address and total size in private fields not visible to the library.

A data destination manager provides three methods:

`init_destination (j_compress_ptr cinfo)`

Initialize destination. This is called by `jpeg_start_compress()` before any data is actually written. It must initialize `next_output_byte` and `free_in_buffer`. `free_in_buffer` must be initialized to a positive value.

`empty_output_buffer (j_compress_ptr cinfo)`

This is called whenever the buffer has filled (`free_in_buffer` reaches zero). In typical applications, it should write out the *entire* buffer (use the saved start address and buffer length; ignore the current state of `next_output_byte` and `free_in_buffer`). Then reset the pointer & count to the start of the buffer, and return `TRUE` indicating that the buffer has been dumped. `free_in_buffer` must be set to a positive value when `TRUE` is returned. A `FALSE` return should only be used when I/O suspension is desired (this operating mode is discussed in the next section).

`term_destination (j_compress_ptr cinfo)`

Terminate destination --- called by `jpeg_finish_compress()` after all data has been written. In most applications, this must flush any data remaining in the buffer. Use either `next_output_byte` or `free_in_buffer` to determine how much data is in the buffer.

`term_destination()` is NOT called by `jpeg_abort()` or `jpeg_destroy()`. If you want the destination manager to be cleaned up during an abort, you must do it yourself.

You will also need code to create a `jpeg_destination_mgr` struct, fill in its method pointers, and insert a pointer to the struct into the "dest" field of the JPEG compression object. This can be done in-line in your setup code if you like, but it's probably cleaner to provide a separate routine similar to the `jpeg_stdio_dest()` or `jpeg_mem_dest()` routines of the supplied destination managers.

Decompression source managers follow a parallel design, but with some additional frammishes. The source manager struct contains a pointer and count defining the next byte to read from the work buffer and the number of bytes remaining:

```
const JOCTET * next_input_byte; /* => next byte to read from buffer */
size_t bytes_in_buffer;      /* # of bytes remaining in buffer */
```

The library increments the pointer and decrements the count until the buffer is emptied. The manager's `fill_input_buffer` method must reset the pointer and count. In most applications, the manager must remember the buffer's starting address and total size in private fields not visible to the library.

A data source manager provides five methods:

`init_source (j_decompress_ptr cinfo)`

Initialize source. This is called by `jpeg_read_header()` before any data is actually read. Unlike `init_destination()`, it may leave `bytes_in_buffer` set to 0 (in which case a `fill_input_buffer()` call will occur immediately).

`fill_input_buffer (j_decompress_ptr cinfo)`

This is called whenever `bytes_in_buffer` has reached zero and more data is wanted. In typical applications, it should read fresh data into the buffer (ignoring the current state of `next_input_byte` and `bytes_in_buffer`), reset the pointer & count to the start of the buffer, and return `TRUE` indicating that the buffer has been reloaded. It is not necessary to fill the buffer entirely, only to obtain at least one more byte. `bytes_in_buffer` **MUST** be set to a positive value if `TRUE` is returned. A `FALSE` return should only be used when I/O suspension is desired (this mode is discussed in the next section).

`skip_input_data (j_decompress_ptr cinfo, long num_bytes)`

Skip `num_bytes` worth of data. The buffer pointer and count should be advanced over `num_bytes` input bytes, refilling the buffer as needed. This is used to skip over a potentially large amount of uninteresting data (such as an APPn marker). In some applications it may be possible to optimize away the reading of the skipped data, but it's not clear that being smart is worth much trouble; large skips are uncommon. `bytes_in_buffer` may be zero on return. A zero or negative skip count should be treated as a no-op.

`resync_to_restart (j_decompress_ptr cinfo, int desired)`

This routine is called only when the decompressor has failed to find a restart (RSTn) marker where one is expected. Its mission is to find a suitable point for resuming decompression. For most applications, we recommend that you just use the default `resync`

procedure, jpeg\_resync\_to\_restart(). However, if you are able to back up in the input data stream, or if you have a-priori knowledge about the likely location of restart markers, you may be able to do better. Read the read\_restart\_marker() and jpeg\_resync\_to\_restart() routines in jdmarker.c if you think you'd like to implement your own resync procedure.

term\_source (j\_decompress\_ptr cinfo)

Terminate source --- called by jpeg\_finish\_decompress() after all data has been read. Often a no-op.

For both fill\_input\_buffer() and skip\_input\_data(), there is no such thing as an EOF return. If the end of the file has been reached, the routine has a choice of exiting via ERREXIT() or inserting fake data into the buffer. In most cases, generating a warning message and inserting a fake EOI marker is the best course of action --- this will allow the decompressor to output however much of the image is there. In pathological cases, the decompressor may swallow the EOI and again demand data ... just keep feeding it fake EOIs. jdatasrc.c illustrates the recommended error recovery behavior.

term\_source() is NOT called by jpeg\_abort() or jpeg\_destroy(). If you want the source manager to be cleaned up during an abort, you must do it yourself.

You will also need code to create a jpeg\_source\_mgr struct, fill in its method pointers, and insert a pointer to the struct into the "src" field of the JPEG decompression object. This can be done in-line in your setup code if you like, but it's probably cleaner to provide a separate routine similar to the jpeg\_stdio\_src() or jpeg\_mem\_src() routines of the supplied source managers.

For more information, consult the memory and stdio source and destination managers in jdatasrc.c and jdatadst.c.

## I/O suspension

-----

Some applications need to use the JPEG library as an incremental memory-to-memory filter: when the compressed data buffer is filled or emptied, they want control to return to the outer loop, rather than expecting that the buffer can be emptied or reloaded within the data source/destination manager subroutine. The library supports this need by providing an "I/O suspension" mode, which we describe in this section.

The I/O suspension mode is not a panacea: nothing is guaranteed about the maximum amount of time spent in any one call to the library, so it will not eliminate response-time problems in single-threaded applications. If you need guaranteed response time, we suggest you "bite the bullet" and implement a real multi-tasking capability.

To use I/O suspension, cooperation is needed between the calling application and the data source or destination manager; you will always need a custom source/destination manager. (Please read the previous section if you haven't already.) The basic idea is that the `empty_output_buffer()` or `fill_input_buffer()` routine is a no-op, merely returning `FALSE` to indicate that it has done nothing. Upon seeing this, the JPEG library suspends operation and returns to its caller. The surrounding application is responsible for emptying or refilling the work buffer before calling the JPEG library again.

Compression suspension:

For compression suspension, use an `empty_output_buffer()` routine that returns `FALSE`; typically it will not do anything else. This will cause the compressor to return to the caller of `jpeg_write_scanlines()`, with the return value indicating that not all the supplied scanlines have been accepted. The application must make more room in the output buffer, adjust the output buffer pointer/count appropriately, and then call `jpeg_write_scanlines()` again, pointing to the first unconsumed scanline.

When forced to suspend, the compressor will backtrack to a convenient stopping point (usually the start of the current MCU); it will regenerate some output data when restarted. Therefore, although `empty_output_buffer()` is only called when the buffer is filled, you should NOT write out the entire buffer after a suspension. Write only the data up to the current position of `next_output_byte/free_in_buffer`. The data beyond that point will be regenerated after resumption.

Because of the backtracking behavior, a good-size output buffer is essential for efficiency; you don't want the compressor to suspend often. (In fact, an overly small buffer could lead to infinite looping, if a single MCU required more data than would fit in the buffer.) We recommend a buffer of at least several Kbytes. You may want to insert explicit code to ensure that you don't call `jpeg_write_scanlines()` unless there is a reasonable amount of space in the output buffer; in other words, flush the buffer before trying to compress more data.

The compressor does not allow suspension while it is trying to write JPEG markers at the beginning and end of the file. This means that:

- \* At the beginning of a compression operation, there must be enough free space in the output buffer to hold the header markers (typically 600 or so bytes). The recommended buffer size is bigger than this anyway, so this is not a problem as long as you start with an empty buffer. However, this restriction might catch you if you insert large special markers, such as a JFIF thumbnail image, without flushing the buffer afterwards.
- \* When you call `jpeg_finish_compress()`, there must be enough space in the output buffer to emit any buffered data and the final EOI marker. In the

current implementation, half a dozen bytes should suffice for this, but for safety's sake we recommend ensuring that at least 100 bytes are free before calling `jpeg_finish_compress()`.

A more significant restriction is that `jpeg_finish_compress()` cannot suspend. This means you cannot use suspension with multi-pass operating modes, namely Huffman code optimization and multiple-scan output. Those modes write the whole file during `jpeg_finish_compress()`, which will certainly result in buffer overrun. (Note that this restriction applies only to compression, not decompression. The decompressor supports input suspension in all of its operating modes.)

Decompression suspension:

For decompression suspension, use a `fill_input_buffer()` routine that simply returns `FALSE` (except perhaps during error recovery, as discussed below). This will cause the decompressor to return to its caller with an indication that suspension has occurred. This can happen at four places:

- \* `jpeg_read_header()`: will return `JPEG_SUSPENDED`.
- \* `jpeg_start_decompress()`: will return `FALSE`, rather than its usual `TRUE`.
- \* `jpeg_read_scanlines()`: will return the number of scanlines already completed (possibly 0).
- \* `jpeg_finish_decompress()`: will return `FALSE`, rather than its usual `TRUE`.

The surrounding application must recognize these cases, load more data into the input buffer, and repeat the call. In the case of `jpeg_read_scanlines()`, increment the passed pointers past any scanlines successfully read.

Just as with compression, the decompressor will typically backtrack to a convenient restart point before suspending. When `fill_input_buffer()` is called, `next_input_byte/bytes_in_buffer` point to the current restart point, which is where the decompressor will backtrack to if `FALSE` is returned. The data beyond that position must NOT be discarded if you suspend; it needs to be re-read upon resumption. In most implementations, you'll need to shift this data down to the start of your work buffer and then load more data after it. Again, this behavior means that a several-Kbyte work buffer is essential for decent performance; furthermore, you should load a reasonable amount of new data before resuming decompression. (If you loaded, say, only one new byte each time around, you could waste a LOT of cycles.)

The `skip_input_data()` source manager routine requires special care in a suspension scenario. This routine is NOT granted the ability to suspend the decompressor; it can decrement `bytes_in_buffer` to zero, but no more. If the requested skip distance exceeds the amount of data currently in the input buffer, then `skip_input_data()` must set `bytes_in_buffer` to zero and record the additional skip distance somewhere else. The decompressor will immediately call `fill_input_buffer()`, which should return `FALSE`, which will cause a suspension return. The surrounding application must then arrange to discard the recorded number of bytes before it resumes loading the input buffer.

(Yes, this design is rather baroque, but it avoids complexity in the far more common case where a non-suspending source manager is used.)

If the input data has been exhausted, we recommend that you emit a warning and insert dummy EOI markers just as a non-suspending data source manager would do. This can be handled either in the surrounding application logic or within `fill_input_buffer()`; the latter is probably more efficient. If `fill_input_buffer()` knows that no more data is available, it can set the pointer/count to point to a dummy EOI marker and then return `TRUE` just as though it had read more data in a non-suspending situation.

The decompressor does not attempt to suspend within standard JPEG markers; instead it will backtrack to the start of the marker and reprocess the whole marker next time. Hence the input buffer must be large enough to hold the longest standard marker in the file. Standard JPEG markers should normally not exceed a few hundred bytes each (DHT tables are typically the longest). We recommend at least a 2K buffer for performance reasons, which is much larger than any correct marker is likely to be. For robustness against damaged marker length counts, you may wish to insert a test in your application for the case that the input buffer is completely full and yet the decoder has suspended without consuming any data --- otherwise, if this situation did occur, it would lead to an endless loop. (The library can't provide this test since it has no idea whether "the buffer is full", or even whether there is a fixed-size input buffer.)

The input buffer would need to be 64K to allow for arbitrary COM or APPn markers, but these are handled specially: they are either saved into allocated memory, or skipped over by calling `skip_input_data()`. In the former case, suspension is handled correctly, and in the latter case, the problem of buffer overrun is placed on `skip_input_data`'s shoulders, as explained above. Note that if you provide your own marker handling routine for large markers, you should consider how to deal with buffer overflow.

Multiple-buffer management:

In some applications it is desirable to store the compressed data in a linked list of buffer areas, so as to avoid data copying. This can be handled by having `empty_output_buffer()` or `fill_input_buffer()` set the pointer and count to reference the next available buffer; `FALSE` is returned only if no more buffers are available. Although seemingly straightforward, there is a pitfall in this approach: the backtrack that occurs when `FALSE` is returned could back up into an earlier buffer. For example, when `fill_input_buffer()` is called, the current pointer & count indicate the backtrack restart point. Since `fill_input_buffer()` will set the pointer and count to refer to a new buffer, the restart position must be saved somewhere else. Suppose a second call to `fill_input_buffer()` occurs in the same library call, and no additional input data is available, so `fill_input_buffer` must return `FALSE`. If the JPEG library has not moved the pointer/count forward in the current

buffer, then \*the correct restart point is the saved position in the prior buffer\*. Prior buffers may be discarded only after the library establishes a restart point within a later buffer. Similar remarks apply for output into a chain of buffers.

The library will never attempt to backtrack over a `skip_input_data()` call, so any skipped data can be permanently discarded. You still have to deal with the case of skipping not-yet-received data, however.

It's much simpler to use only a single buffer; when `fill_input_buffer()` is called, move any unconsumed data (beyond the current pointer/count) down to the beginning of this buffer and then load new data into the remaining buffer space. This approach requires a little more data copying but is far easier to get right.

### Progressive JPEG support

-----

Progressive JPEG rearranges the stored data into a series of scans of increasing quality. In situations where a JPEG file is transmitted across a slow communications link, a decoder can generate a low-quality image very quickly from the first scan, then gradually improve the displayed quality as more scans are received. The final image after all scans are complete is identical to that of a regular (sequential) JPEG file of the same quality setting. Progressive JPEG files are often slightly smaller than equivalent sequential JPEG files, but the possibility of incremental display is the main reason for using progressive JPEG.

The IJG encoder library generates progressive JPEG files when given a suitable "scan script" defining how to divide the data into scans. Creation of progressive JPEG files is otherwise transparent to the encoder. Progressive JPEG files can also be read transparently by the decoder library. If the decoding application simply uses the library as defined above, it will receive a final decoded image without any indication that the file was progressive. Of course, this approach does not allow incremental display. To perform incremental display, an application needs to use the decoder library's "buffered-image" mode, in which it receives a decoded image multiple times.

Each displayed scan requires about as much work to decode as a full JPEG image of the same size, so the decoder must be fairly fast in relation to the data transmission rate in order to make incremental display useful. However, it is possible to skip displaying the image and simply add the incoming bits to the decoder's coefficient buffer. This is fast because only Huffman decoding need be done, not IDCT, upsampling, colorspace conversion, etc. The IJG decoder library allows the application to switch dynamically between displaying the image and simply absorbing the incoming bits. A properly

coded application can automatically adapt the number of display passes to suit the time available as the image is received. Also, a final higher-quality display cycle can be performed from the buffered data after the end of the file is reached.

#### Progressive compression:

To create a progressive JPEG file (or a multiple-scan sequential JPEG file), set the `scan_info` `cinfo` field to point to an array of scan descriptors, and perform compression as usual. Instead of constructing your own scan list, you can call the `jpeg_simple_progression()` helper routine to create a recommended progression sequence; this method should be used by all applications that don't want to get involved in the nitty-gritty of progressive scan sequence design. (If you want to provide user control of scan sequences, you may wish to borrow the scan script reading code found in `rdswitch.c`, so that you can read scan script files just like `cjpeg`'s.)

When `scan_info` is not `NULL`, the compression library will store DCT'd data into a buffer array as `jpeg_write_scanlines()` is called, and will emit all the requested scans during `jpeg_finish_compress()`. This implies that multiple-scan output cannot be created with a suspending data destination manager, since `jpeg_finish_compress()` does not support suspension. We should also note that the compressor currently forces Huffman optimization mode when creating a progressive JPEG file, because the default Huffman tables are unsuitable for progressive files.

#### Progressive decompression:

When buffered-image mode is not used, the decoder library will read all of a multi-scan file during `jpeg_start_decompress()`, so that it can provide a final decoded image. (Here "multi-scan" means either progressive or multi-scan sequential.) This makes multi-scan files transparent to the decoding application. However, existing applications that used suspending input with version 5 of the IJG library will need to be modified to check for a suspension return from `jpeg_start_decompress()`.

To perform incremental display, an application must use the library's buffered-image mode. This is described in the next section.

#### Buffered-image mode

-----

In buffered-image mode, the library stores the partially decoded image in a coefficient buffer, from which it can be read out as many times as desired. This mode is typically used for incremental display of progressive JPEG files, but it can be used with any JPEG file. Each scan of a progressive JPEG file adds more data (more detail) to the buffered image. The application can display in lockstep with the source file (one display pass per input scan),



or it can allow input processing to outrun display processing. By making input and display processing run independently, it is possible for the application to adapt progressive display to a wide range of data transmission rates.

The basic control flow for buffered-image decoding is

```
jpeg_create_decompress()
set data source
jpeg_read_header()
set overall decompression parameters
cinfo.buffered_image = TRUE; /* select buffered-image mode */
jpeg_start_decompress()
for (each output pass) {
    adjust output decompression parameters if required
    jpeg_start_output() /* start a new output pass */
    for (all scanlines in image) {
        jpeg_read_scanlines()
        display scanlines
    }
    jpeg_finish_output() /* terminate output pass */
}
jpeg_finish_decompress()
jpeg_destroy_decompress()
```

This differs from ordinary unbuffered decoding in that there is an additional level of looping. The application can choose how many output passes to make and how to display each pass.

The simplest approach to displaying progressive images is to do one display pass for each scan appearing in the input file. In this case the outer loop condition is typically

```
while (! jpeg_input_complete(&cinfo))
and the start-output call should read
jpeg_start_output(&cinfo, cinfo.input_scan_number);
```

The second parameter to `jpeg_start_output()` indicates which scan of the input file is to be displayed; the scans are numbered starting at 1 for this purpose. (You can use a loop counter starting at 1 if you like, but using the library's input scan counter is easier.) The library automatically reads data as necessary to complete each requested scan, and `jpeg_finish_output()` advances to the next scan or end-of-image marker (hence `input_scan_number` will be incremented by the time control arrives back at `jpeg_start_output()`). With this technique, data is read from the input file only as needed, and input and output processing run in lockstep.

After reading the final scan and reaching the end of the input file, the buffered image remains available; it can be read additional times by repeating the `jpeg_start_output()/jpeg_read_scanlines()/jpeg_finish_output()`

sequence. For example, a useful technique is to use fast one-pass color quantization for display passes made while the image is arriving, followed by a final display pass using two-pass quantization for highest quality. This is done by changing the library parameters before the final output pass. Changing parameters between passes is discussed in detail below.

In general the last scan of a progressive file cannot be recognized as such until after it is read, so a post-input display pass is the best approach if you want special processing in the final pass.

When done with the image, be sure to call `jpeg_finish_decompress()` to release the buffered image (or just use `jpeg_destroy_decompress()`).

If input data arrives faster than it can be displayed, the application can cause the library to decode input data in advance of what's needed to produce output. This is done by calling the routine `jpeg_consume_input()`.

The return value is one of the following:

`JPEG_REACHED_SOS`: reached an SOS marker (the start of a new scan)

`JPEG_REACHED_EOI`: reached the EOI marker (end of image)

`JPEG_ROW_COMPLETED`: completed reading one MCU row of compressed data

`JPEG_SCAN_COMPLETED`: completed reading last MCU row of current scan

`JPEG_SUSPENDED`: suspended before completing any of the above

(`JPEG_SUSPENDED` can occur only if a suspending data source is used.) This

routine can be called at any time after initializing the JPEG object. It

reads some additional data and returns when one of the indicated significant

events occurs. (If called after the EOI marker is reached, it will

immediately return `JPEG_REACHED_EOI` without attempting to read more data.)

The library's output processing will automatically call `jpeg_consume_input()` whenever the output processing overtakes the input; thus, simple lockstep display requires no direct calls to `jpeg_consume_input()`. But by adding calls to `jpeg_consume_input()`, you can absorb data in advance of what is being displayed. This has two benefits:

- \* You can limit buildup of unprocessed data in your input buffer.
- \* You can eliminate extra display passes by paying attention to the state of the library's input processing.

The first of these benefits only requires interspersing calls to `jpeg_consume_input()` with your display operations and any other processing you may be doing. To avoid wasting cycles due to backtracking, it's best to call `jpeg_consume_input()` only after a hundred or so new bytes have arrived. This is discussed further under "I/O suspension", above. (Note: the JPEG library currently is not thread-safe. You must not call `jpeg_consume_input()` from one thread of control if a different library routine is working on the same JPEG object in another thread.)

When input arrives fast enough that more than one new scan is available before you start a new output pass, you may as well skip the output pass

corresponding to the completed scan. This occurs for free if you pass `cinfo.input_scan_number` as the target scan number to `jpeg_start_output()`. The `input_scan_number` field is simply the index of the scan currently being consumed by the input processor. You can ensure that this is up-to-date by emptying the input buffer just before calling `jpeg_start_output()`: call `jpeg_consume_input()` repeatedly until it returns `JPEG_SUSPENDED` or `JPEG_REACHED_EOI`.

The target scan number passed to `jpeg_start_output()` is saved in the `cinfo.output_scan_number` field. The library's output processing calls `jpeg_consume_input()` whenever the current input scan number and row within that scan is less than or equal to the current output scan number and row. Thus, input processing can "get ahead" of the output processing but is not allowed to "fall behind". You can achieve several different effects by manipulating this interlock rule. For example, if you pass a target scan number greater than the current input scan number, the output processor will wait until that scan starts to arrive before producing any output. (To avoid an infinite loop, the target scan number is automatically reset to the last scan number when the end of image is reached. Thus, if you specify a large target scan number, the library will just absorb the entire input file and then perform an output pass. This is effectively the same as what `jpeg_start_decompress()` does when you don't select buffered-image mode.) When you pass a target scan number equal to the current input scan number, the image is displayed no faster than the current input scan arrives. The final possibility is to pass a target scan number less than the current input scan number; this disables the input/output interlock and causes the output processor to simply display whatever it finds in the image buffer, without waiting for input. (However, the library will not accept a target scan number less than one, so you can't avoid waiting for the first scan.)

When data is arriving faster than the output display processing can advance through the image, `jpeg_consume_input()` will store data into the buffered image beyond the point at which the output processing is reading data out again. If the input arrives fast enough, it may "wrap around" the buffer to the point where the input is more than one whole scan ahead of the output. If the output processing simply proceeds through its display pass without paying attention to the input, the effect seen on-screen is that the lower part of the image is one or more scans better in quality than the upper part. Then, when the next output scan is started, you have a choice of what target scan number to use. The recommended choice is to use the current input scan number at that time, which implies that you've skipped the output scans corresponding to the input scans that were completed while you processed the previous output scan. In this way, the decoder automatically adapts its speed to the arriving data, by skipping output scans as necessary to keep up with the arriving data.

When using this strategy, you'll want to be sure that you perform a final output pass after receiving all the data; otherwise your last display may not

be full quality across the whole screen. So the right outer loop logic is something like this:

```
do {
    absorb any waiting input by calling jpeg_consume_input()
    final_pass = jpeg_input_complete(&cinfo);
    adjust output decompression parameters if required
    jpeg_start_output(&cinfo, cinfo.input_scan_number);
    ...
    jpeg_finish_output()
} while (! final_pass);
```

rather than quitting as soon as `jpeg_input_complete()` returns TRUE. This arrangement makes it simple to use higher-quality decoding parameters for the final pass. But if you don't want to use special parameters for the final pass, the right loop logic is like this:

```
for (;;) {
    absorb any waiting input by calling jpeg_consume_input()
    jpeg_start_output(&cinfo, cinfo.input_scan_number);
    ...
    jpeg_finish_output()
    if (jpeg_input_complete(&cinfo) &&
        cinfo.input_scan_number == cinfo.output_scan_number)
        break;
}
```

In this case you don't need to know in advance whether an output pass is to be the last one, so it's not necessary to have reached EOF before starting the final output pass; rather, what you want to test is whether the output pass was performed in sync with the final input scan. This form of the loop will avoid an extra output pass whenever the decoder is able (or nearly able) to keep up with the incoming data.

When the data transmission speed is high, you might begin a display pass, then find that much or all of the file has arrived before you can complete the pass. (You can detect this by noting the `JPEG_REACHED_EOI` return code from `jpeg_consume_input()`, or equivalently by testing `jpeg_input_complete()`.) In this situation you may wish to abort the current display pass and start a new one using the newly arrived information. To do so, just call `jpeg_finish_output()` and then start a new pass with `jpeg_start_output()`.

A variant strategy is to abort and restart display if more than one complete scan arrives during an output pass; this can be detected by noting `JPEG_REACHED_SOS` returns and/or examining `cinfo.input_scan_number`. This idea should be employed with caution, however, since the display process might never get to the bottom of the image before being aborted, resulting in the lower part of the screen being several passes worse than the upper. In most cases it's probably best to abort an output pass only if the whole file has arrived and you want to begin the final output pass immediately.

When receiving data across a communication link, we recommend always using

the current input scan number for the output target scan number; if a higher-quality final pass is to be done, it should be started (aborting any incomplete output pass) as soon as the end of file is received. However, many other strategies are possible. For example, the application can examine the parameters of the current input scan and decide whether to display it or not. If the scan contains only chroma data, one might choose not to use it as the target scan, expecting that the scan will be small and will arrive quickly. To skip to the next scan, call `jpeg_consume_input()` until it returns `JPEG_REACHED_SOS` or `JPEG_REACHED_EOI`. Or just use the next higher number as the target scan for `jpeg_start_output()`; but that method doesn't let you inspect the next scan's parameters before deciding to display it.

In buffered-image mode, `jpeg_start_decompress()` never performs input and thus never suspends. An application that uses input suspension with buffered-image mode must be prepared for suspension returns from these routines:

- \* `jpeg_start_output()` performs input only if you request 2-pass quantization and the target scan isn't fully read yet. (This is discussed below.)
- \* `jpeg_read_scanlines()`, as always, returns the number of scanlines that it was able to produce before suspending.
- \* `jpeg_finish_output()` will read any markers following the target scan, up to the end of the file or the SOS marker that begins another scan. (But it reads no input if `jpeg_consume_input()` has already reached the end of the file or a SOS marker beyond the target output scan.)
- \* `jpeg_finish_decompress()` will read until the end of file, and thus can suspend if the end hasn't already been reached (as can be tested by calling `jpeg_input_complete()`).

`jpeg_start_output()`, `jpeg_finish_output()`, and `jpeg_finish_decompress()` all return `TRUE` if they completed their tasks, `FALSE` if they had to suspend. In the event of a `FALSE` return, the application must load more input data and repeat the call. Applications that use non-suspending data sources need not check the return values of these three routines.

It is possible to change decoding parameters between output passes in the buffered-image mode. The decoder library currently supports only very limited changes of parameters. **ONLY THE FOLLOWING** parameter changes are allowed after `jpeg_start_decompress()` is called:

- \* `dct_method` can be changed before each call to `jpeg_start_output()`. For example, one could use a fast DCT method for early scans, changing to a higher quality method for the final scan.
- \* `dither_mode` can be changed before each call to `jpeg_start_output()`; of course this has no impact if not using color quantization. Typically one would use ordered dither for initial passes, then switch to Floyd-Steinberg dither for the final pass. Caution: changing dither mode can cause more memory to be allocated by the library. Although the amount of memory involved is not large (a scanline or so), it may cause the

initial `max_memory_to_use` specification to be exceeded, which in the worst case would result in an out-of-memory failure.

- \* `do_block_smoothing` can be changed before each call to `jpeg_start_output()`. This setting is relevant only when decoding a progressive JPEG image. During the first DC-only scan, block smoothing provides a very "fuzzy" look instead of the very "blocky" look seen without it; which is better seems a matter of personal taste. But block smoothing is nearly always a win during later stages, especially when decoding a successive-approximation image: smoothing helps to hide the slight blockiness that otherwise shows up on smooth gradients until the lowest coefficient bits are sent.
- \* Color quantization mode can be changed under the rules described below. You \*cannot\* change between full-color and quantized output (because that would alter the required I/O buffer sizes), but you can change which quantization method is used.

When generating color-quantized output, changing quantization method is a very useful way of switching between high-speed and high-quality display. The library allows you to change among its three quantization methods:

1. Single-pass quantization to a fixed color cube.  
Selected by `cinfo.two_pass_quantize = FALSE` and `cinfo.colormap = NULL`.
2. Single-pass quantization to an application-supplied colormap.  
Selected by setting `cinfo.colormap` to point to the colormap (the value of `two_pass_quantize` is ignored); also set `cinfo.actual_number_of_colors`.
3. Two-pass quantization to a colormap chosen specifically for the image.  
Selected by `cinfo.two_pass_quantize = TRUE` and `cinfo.colormap = NULL`. (This is the default setting selected by `jpeg_read_header`, but it is probably NOT what you want for the first pass of progressive display!)  
These methods offer successively better quality and lesser speed. However, only the first method is available for quantizing in non-RGB color spaces.

IMPORTANT: because the different quantizer methods have very different working-storage requirements, the library requires you to indicate which one(s) you intend to use before you call `jpeg_start_decompress()`. (If we did not require this, the `max_memory_to_use` setting would be a complete fiction.)

You do this by setting one or more of these three `cinfo` fields to TRUE:

`enable_1pass_quant` Fixed color cube colormap  
`enable_external_quant` Externally-supplied colormap  
`enable_2pass_quant` Two-pass custom colormap

All three are initialized FALSE by `jpeg_read_header()`. But `jpeg_start_decompress()` automatically sets TRUE the one selected by the current `two_pass_quantize` and `colormap` settings, so you only need to set the enable flags for any other quantization methods you plan to change to later.

After setting the enable flags correctly at `jpeg_start_decompress()` time, you can change to any enabled quantization method by setting `two_pass_quantize` and `colormap` properly just before calling `jpeg_start_output()`. The following special rules apply:

1. You must explicitly set `cinfo.colormap` to NULL when switching to 1-pass

or 2-pass mode from a different mode, or when you want the 2-pass quantizer to be re-run to generate a new colormap.

2. To switch to an external colormap, or to change to a different external colormap than was used on the prior pass, you must call `jpeg_new_colormap()` after setting `cinfo.colormap`.

NOTE: if you want to use the same colormap as was used in the prior pass, you should not do either of these things. This will save some nontrivial switchover costs.

(These requirements exist because `cinfo.colormap` will always be non-NULL after completing a prior output pass, since both the 1-pass and 2-pass quantizers set it to point to their output colormaps. Thus you have to do one of these two things to notify the library that something has changed.

Yup, it's a bit klugy, but it's necessary to do it this way for backwards compatibility.)

Note that in buffered-image mode, the library generates any requested colormap during `jpeg_start_output()`, not during `jpeg_start_decompress()`.

When using two-pass quantization, `jpeg_start_output()` makes a pass over the buffered image to determine the optimum color map; it therefore may take a significant amount of time, whereas ordinarily it does little work. The progress monitor hook is called during this pass, if defined. It is also important to realize that if the specified target scan number is greater than or equal to the current input scan number, `jpeg_start_output()` will attempt to consume input as it makes this pass. If you use a suspending data source, you need to check for a FALSE return from `jpeg_start_output()` under these conditions. The combination of 2-pass quantization and a not-yet-fully-read target scan is the only case in which `jpeg_start_output()` will consume input.

Application authors who support buffered-image mode may be tempted to use it for all JPEG images, even single-scan ones. This will work, but it is inefficient: there is no need to create an image-sized coefficient buffer for single-scan images. Requesting buffered-image mode for such an image wastes memory. Worse, it can cost time on large images, since the buffered data has to be swapped out or written to a temporary file. If you are concerned about maximum performance on baseline JPEG files, you should use buffered-image mode only when the incoming file actually has multiple scans. This can be tested by calling `jpeg_has_multiple_scans()`, which will return a correct result at any time after `jpeg_read_header()` completes.

It is also worth noting that when you use `jpeg_consume_input()` to let input processing get ahead of output processing, the resulting pattern of access to the coefficient buffer is quite nonsequential. It's best to use the memory manager `jmemnobs.c` if you can (ie, if you have enough real or virtual main memory). If not, at least make sure that `max_memory_to_use` is set as high as possible. If the JPEG memory manager has to use a temporary file, you will probably see a lot of disk traffic and poor performance. (This could be

improved with additional work on the memory manager, but we haven't gotten around to it yet.)

In some applications it may be convenient to use `jpeg_consume_input()` for all input processing, including reading the initial markers; that is, you may wish to call `jpeg_consume_input()` instead of `jpeg_read_header()` during startup. This works, but note that you must check for `JPEG_REACHED_SOS` and `JPEG_REACHED_EOI` return codes as the equivalent of `jpeg_read_header()`'s codes. Once the first SOS marker has been reached, you must call `jpeg_start_decompress()` before `jpeg_consume_input()` will consume more input; it'll just keep returning `JPEG_REACHED_SOS` until you do. If you read a tables-only file this way, `jpeg_consume_input()` will return `JPEG_REACHED_EOI` without ever returning `JPEG_REACHED_SOS`; be sure to check for this case. If this happens, the decompressor will not read any more input until you call `jpeg_abort()` to reset it. It is OK to call `jpeg_consume_input()` even when not using buffered-image mode, but in that case it's basically a no-op after the initial markers have been read: it will just return `JPEG_SUSPENDED`.

#### Abbreviated datastreams and multiple images

-----

A JPEG compression or decompression object can be reused to process multiple images. This saves a small amount of time per image by eliminating the "create" and "destroy" operations, but that isn't the real purpose of the feature. Rather, reuse of an object provides support for abbreviated JPEG datastreams. Object reuse can also simplify processing a series of images in a single input or output file. This section explains these features.

A JPEG file normally contains several hundred bytes worth of quantization and Huffman tables. In a situation where many images will be stored or transmitted with identical tables, this may represent an annoying overhead. The JPEG standard therefore permits tables to be omitted. The standard defines three classes of JPEG datastreams:

- \* "Interchange" datastreams contain an image and all tables needed to decode the image. These are the usual kind of JPEG file.
- \* "Abbreviated image" datastreams contain an image, but are missing some or all of the tables needed to decode that image.
- \* "Abbreviated table specification" (henceforth "tables-only") datastreams contain only table specifications.

To decode an abbreviated image, it is necessary to load the missing table(s) into the decoder beforehand. This can be accomplished by reading a separate tables-only file. A variant scheme uses a series of images in which the first image is an interchange (complete) datastream, while subsequent ones are abbreviated and rely on the tables loaded by the first image. It is assumed that once the decoder has read a table, it will remember that table until a new definition for the same table number is encountered.



It is the application designer's responsibility to figure out how to associate the correct tables with an abbreviated image. While abbreviated datastreams can be useful in a closed environment, their use is strongly discouraged in any situation where data exchange with other applications might be needed. Caveat designer.

The JPEG library provides support for reading and writing any combination of tables-only datastreams and abbreviated images. In both compression and decompression objects, a quantization or Huffman table will be retained for the lifetime of the object, unless it is overwritten by a new table definition.

To create abbreviated image datastreams, it is only necessary to tell the compressor not to emit some or all of the tables it is using. Each quantization and Huffman table struct contains a boolean field "sent\_table", which normally is initialized to FALSE. For each table used by the image, the header-writing process emits the table and sets sent\_table = TRUE unless it is already TRUE. (In normal usage, this prevents outputting the same table definition multiple times, as would otherwise occur because the chroma components typically share tables.) Thus, setting this field to TRUE before calling jpeg\_start\_compress() will prevent the table from being written at all.

If you want to create a "pure" abbreviated image file containing no tables, just call "jpeg\_suppress\_tables(&cinfo, TRUE)" after constructing all the tables. If you want to emit some but not all tables, you'll need to set the individual sent\_table fields directly.

To create an abbreviated image, you must also call jpeg\_start\_compress() with a second parameter of FALSE, not TRUE. Otherwise jpeg\_start\_compress() will force all the sent\_table fields to FALSE. (This is a safety feature to prevent abbreviated images from being created accidentally.)

To create a tables-only file, perform the same parameter setup that you normally would, but instead of calling jpeg\_start\_compress() and so on, call jpeg\_write\_tables(&cinfo). This will write an abbreviated datastream containing only SOI, DQT and/or DHT markers, and EOI. All the quantization and Huffman tables that are currently defined in the compression object will be emitted unless their sent\_tables flag is already TRUE, and then all the sent\_tables flags will be set TRUE.

A sure-fire way to create matching tables-only and abbreviated image files is to proceed as follows:

```
create JPEG compression object
set JPEG parameters
set destination to tables-only file
jpeg_write_tables(&cinfo);
```

```

set destination to image file
jpeg_start_compress(&cinfo, FALSE);
write data...
jpeg_finish_compress(&cinfo);

```

Since the JPEG parameters are not altered between writing the table file and the abbreviated image file, the same tables are sure to be used. Of course, you can repeat the `jpeg_start_compress()` ... `jpeg_finish_compress()` sequence many times to produce many abbreviated image files matching the table file.

You cannot suppress output of the computed Huffman tables when Huffman optimization is selected. (If you could, there'd be no way to decode the image...) Generally, you don't want to set `optimize_coding = TRUE` when you are trying to produce abbreviated files.

In some cases you might want to compress an image using tables which are not stored in the application, but are defined in an interchange or tables-only file readable by the application. This can be done by setting up a JPEG decompression object to read the specification file, then copying the tables into your compression object. See `jpeg_copy_critical_parameters()` for an example of copying quantization tables.

To read abbreviated image files, you simply need to load the proper tables into the decompression object before trying to read the abbreviated image. If the proper tables are stored in the application program, you can just allocate the table structs and fill in their contents directly. For example, to load a fixed quantization table into table slot "n":

```

if (cinfo.quant_tbl_ptrs[n] == NULL)
    cinfo.quant_tbl_ptrs[n] = jpeg_alloc_quant_table((j_common_ptr) &cinfo);
quant_ptr = cinfo.quant_tbl_ptrs[n]; /* quant_ptr is JQUANT_TBL* */
for (i = 0; i < 64; i++) {
    /* Qtable[] is desired quantization table, in natural array order */
    quant_ptr->quantval[i] = Qtable[i];
}

```

Code to load a fixed Huffman table is typically (for AC table "n"):

```

if (cinfo.ac_huff_tbl_ptrs[n] == NULL)
    cinfo.ac_huff_tbl_ptrs[n] = jpeg_alloc_huff_table((j_common_ptr) &cinfo);
huff_ptr = cinfo.ac_huff_tbl_ptrs[n]; /* huff_ptr is JHUFF_TBL* */
for (i = 1; i <= 16; i++) {
    /* counts[i] is number of Huffman codes of length i bits, i=1..16 */
    huff_ptr->bits[i] = counts[i];
}
for (i = 0; i < 256; i++) {
    /* symbols[] is the list of Huffman symbols, in code-length order */

```

```
    huff_ptr->huffval[i] = symbols[i];  
}
```

(Note that trying to set `cinfo.quant_tbl_ptrs[n]` to point directly at a constant `JQUANT_TBL` object is not safe. If the incoming file happened to contain a quantization table definition, your master table would get overwritten! Instead allocate a working table copy and copy the master table into it, as illustrated above. Ditto for Huffman tables, of course.)

You might want to read the tables from a tables-only file, rather than hard-wiring them into your application. The `jpeg_read_header()` call is sufficient to read a tables-only file. You must pass a second parameter of `FALSE` to indicate that you do not require an image to be present. Thus, the typical scenario is

```
create JPEG decompression object  
set source to tables-only file  
jpeg_read_header(&cinfo, FALSE);  
set source to abbreviated image file  
jpeg_read_header(&cinfo, TRUE);  
set decompression parameters  
jpeg_start_decompress(&cinfo);  
read data...  
jpeg_finish_decompress(&cinfo);
```

In some cases, you may want to read a file without knowing whether it contains an image or just tables. In that case, pass `FALSE` and check the return value from `jpeg_read_header()`: it will be `JPEG_HEADER_OK` if an image was found, `JPEG_HEADER_TABLES_ONLY` if only tables were found. (A third return value, `JPEG_SUSPENDED`, is possible when using a suspending data source manager.) Note that `jpeg_read_header()` will not complain if you read an abbreviated image for which you haven't loaded the missing tables; the missing-table check occurs later, in `jpeg_start_decompress()`.

It is possible to read a series of images from a single source file by repeating the `jpeg_read_header() ... jpeg_finish_decompress()` sequence, without releasing/recreating the JPEG object or the data source module. (If you did reinitialize, any partial bufferload left in the data source buffer at the end of one image would be discarded, causing you to lose the start of the next image.) When you use this method, stored tables are automatically carried forward, so some of the images can be abbreviated images that depend on tables from earlier images.

If you intend to write a series of images into a single destination file, you might want to make a specialized data destination module that doesn't flush the output buffer at `term_destination()` time. This would speed things up by some trifling amount. Of course, you'd need to remember to flush the

buffer after the last image. You can make the later images be abbreviated ones by passing FALSE to jpeg\_start\_compress().

## Special markers

-----

Some applications may need to insert or extract special data in the JPEG datastream. The JPEG standard provides marker types "COM" (comment) and "APP0" through "APP15" (application) to hold application-specific data. Unfortunately, the use of these markers is not specified by the standard. COM markers are fairly widely used to hold user-supplied text. The JFIF file format spec uses APP0 markers with specified initial strings to hold certain data. Adobe applications use APP14 markers beginning with the string "Adobe" for miscellaneous data. Other APPn markers are rarely seen, but might contain almost anything.

If you wish to store user-supplied text, we recommend you use COM markers and place readable 7-bit ASCII text in them. Newline conventions are not standardized --- expect to find LF (Unix style), CR/LF (DOS style), or CR (Mac style). A robust COM reader should be able to cope with random binary garbage, including nulls, since some applications generate COM markers containing non-ASCII junk. (But yours should not be one of them.)

For program-supplied data, use an APPn marker, and be sure to begin it with an identifying string so that you can tell whether the marker is actually yours. It's probably best to avoid using APP0 or APP14 for any private markers. (NOTE: the upcoming SPIFF standard will use APP8 markers; we recommend you not use APP8 markers for any private purposes, either.)

Keep in mind that at most 65533 bytes can be put into one marker, but you can have as many markers as you like.

By default, the IJG compression library will write a JFIF APP0 marker if the selected JPEG colorspace is grayscale or YCbCr, or an Adobe APP14 marker if the selected colorspace is RGB, CMYK, or YCCK. You can disable this, but we don't recommend it. The decompression library will recognize JFIF and Adobe markers and will set the JPEG colorspace properly when one is found.

You can write special markers immediately following the datastream header by calling jpeg\_write\_marker() after jpeg\_start\_compress() and before the first call to jpeg\_write\_scanlines(). When you do this, the markers appear after the SOI and the JFIF APP0 and Adobe APP14 markers (if written), but before all else. Specify the marker type parameter as "JPEG\_COM" for COM or "JPEG\_APP0 + n" for APPn. (Actually, jpeg\_write\_marker will let you write any marker type, but we don't recommend writing any other kinds of marker.)

For example, to write a user comment string pointed to by comment\_text:

```
jpeg_write_marker(cinfo, JPEG_COM, comment_text, strlen(comment_text));
```

If it's not convenient to store all the marker data in memory at once, you can instead call `jpeg_write_m_header()` followed by multiple calls to `jpeg_write_m_byte()`. If you do it this way, it's your responsibility to call `jpeg_write_m_byte()` exactly the number of times given in the length parameter to `jpeg_write_m_header()`. (This method lets you empty the output buffer partway through a marker, which might be important when using a suspending data destination module. In any case, if you are using a suspending destination, you should flush its buffer after inserting any special markers. See "I/O suspension".)

Or, if you prefer to synthesize the marker byte sequence yourself, you can just cram it straight into the data destination module.

If you are writing JFIF 1.02 extension markers (thumbnail images), don't forget to set `cinfo.JFIF_minor_version = 2` so that the encoder will write the correct JFIF version number in the JFIF header marker. The library's default is to write version 1.01, but that's wrong if you insert any 1.02 extension markers. (We could probably get away with just defaulting to 1.02, but there used to be broken decoders that would complain about unknown minor version numbers. To reduce compatibility risks it's safest not to write 1.02 unless you are actually using 1.02 extensions.)

When reading, two methods of handling special markers are available:

1. You can ask the library to save the contents of COM and/or APPn markers into memory, and then examine them at your leisure afterwards.
2. You can supply your own routine to process COM and/or APPn markers on-the-fly as they are read.

The first method is simpler to use, especially if you are using a suspending data source; writing a marker processor that copes with input suspension is not easy (consider what happens if the marker is longer than your available input buffer). However, the second method conserves memory since the marker data need not be kept around after it's been processed.

For either method, you'd normally set up marker handling after creating a decompression object and before calling `jpeg_read_header()`, because the markers of interest will typically be near the head of the file and so will be scanned by `jpeg_read_header`. Once you've established a marker handling method, it will be used for the life of that decompression object (potentially many datastreams), unless you change it. Marker handling is determined separately for COM markers and for each APPn marker code.

To save the contents of special markers in memory, call `jpeg_save_markers(cinfo, marker_code, length_limit)` where `marker_code` is the marker type to save, `JPEG_COM` or `JPEG_APP0+n`.

(To arrange to save all the special marker types, you need to call this routine 17 times, for COM and APP0-APP15.) If the incoming marker is longer than length\_limit data bytes, only length\_limit bytes will be saved; this parameter allows you to avoid chewing up memory when you only need to see the first few bytes of a potentially large marker. If you want to save all the data, set length\_limit to 0xFFFF; that is enough since marker lengths are only 16 bits. As a special case, setting length\_limit to 0 prevents that marker type from being saved at all. (That is the default behavior, in fact.)

After jpeg\_read\_header() completes, you can examine the special markers by following the cinfo->marker\_list pointer chain. All the special markers in the file appear in this list, in order of their occurrence in the file (but omitting any markers of types you didn't ask for). Both the original data length and the saved data length are recorded for each list entry; the latter will not exceed length\_limit for the particular marker type. Note that these lengths exclude the marker length word, whereas the stored representation within the JPEG file includes it. (Hence the maximum data length is really only 65533.)

It is possible that additional special markers appear in the file beyond the SOS marker at which jpeg\_read\_header stops; if so, the marker list will be extended during reading of the rest of the file. This is not expected to be common, however. If you are short on memory you may want to reset the length limit to zero for all marker types after finishing jpeg\_read\_header, to ensure that the max\_memory\_to\_use setting cannot be exceeded due to addition of later markers.

The marker list remains stored until you call jpeg\_finish\_decompress or jpeg\_abort, at which point the memory is freed and the list is set to empty. (jpeg\_destroy also releases the storage, of course.)

Note that the library is internally interested in APP0 and APP14 markers; if you try to set a small nonzero length limit on these types, the library will silently force the length up to the minimum it wants. (But you can set a zero length limit to prevent them from being saved at all.) Also, in a 16-bit environment, the maximum length limit may be constrained to less than 65533 by malloc() limitations. It is therefore best not to assume that the effective length limit is exactly what you set it to be.

If you want to supply your own marker-reading routine, you do it by calling jpeg\_set\_marker\_processor(). A marker processor routine must have the signature

```
boolean jpeg_marker_parser_method (j_decompress_ptr cinfo)
```

Although the marker code is not explicitly passed, the routine can find it in cinfo->unread\_marker. At the time of call, the marker proper has been read from the data source module. The processor routine is responsible for reading the marker length word and the remaining parameter bytes, if any.

Return TRUE to indicate success. (FALSE should be returned only if you are using a suspending data source and it tells you to suspend. See the standard marker processors in `jdmarker.c` for appropriate coding methods if you need to use a suspending data source.)

If you override the default APP0 or APP14 processors, it is up to you to recognize JFIF and Adobe markers if you want colorspace recognition to occur properly. We recommend copying and extending the default processors if you want to do that. (A better idea is to save these marker types for later examination by calling `jpeg_save_markers()`; that method doesn't interfere with the library's own processing of these markers.)

`jpeg_set_marker_processor()` and `jpeg_save_markers()` are mutually exclusive --- if you call one it overrides any previous call to the other, for the particular marker type specified.

A simple example of an external COM processor can be found in `djpeg.c`. Also, see `jpegtran.c` for an example of using `jpeg_save_markers`.

Raw (downsampled) image data

-----

Some applications need to supply already-downsampled image data to the JPEG compressor, or to receive raw downsampled data from the decompressor. The library supports this requirement by allowing the application to write or read raw data, bypassing the normal preprocessing or postprocessing steps. The interface is different from the standard one and is somewhat harder to use. If your interest is merely in bypassing color conversion, we recommend that you use the standard interface and simply set `jpeg_color_space = in_color_space` (or `jpeg_color_space = out_color_space` for decompression). The mechanism described in this section is necessary only to supply or receive downsampled image data, in which not all components have the same dimensions.

To compress raw data, you must supply the data in the colorspace to be used in the JPEG file (please read the earlier section on Special color spaces) and downsampled to the sampling factors specified in the JPEG parameters. You must supply the data in the format used internally by the JPEG library, namely a JSAMPIMAGE array. This is an array of pointers to two-dimensional arrays, each of type JSAMPARRAY. Each 2-D array holds the values for one color component. This structure is necessary since the components are of different sizes. If the image dimensions are not a multiple of the MCU size, you must also pad the data correctly (usually, this is done by replicating the last column and/or row). The data must be padded to a multiple of a DCT block in each component: that is, each downsampled row must contain a multiple of `DCT_h_scaled_size` valid samples, and there must be a multiple of

DCT\_v\_scaled\_size sample rows for each component. (For applications such as conversion of digital TV images, the standard image size is usually a multiple of the DCT block size, so that no padding need actually be done.)

The procedure for compression of raw data is basically the same as normal compression, except that you call `jpeg_write_raw_data()` in place of `jpeg_write_scanlines()`. Before calling `jpeg_start_compress()`, you must do the following:

- \* Set `cinfo->raw_data_in` to TRUE. (It is set FALSE by `jpeg_set_defaults()`.) This notifies the library that you will be supplying raw data.
- \* Ensure `jpeg_color_space` is correct --- an explicit `jpeg_set_colorspace()` call is a good idea. Note that since color conversion is bypassed, `in_color_space` is ignored, except that `jpeg_set_defaults()` uses it to choose the default `jpeg_color_space` setting.
- \* Ensure the sampling factors, `cinfo->comp_info[i].h_samp_factor` and `cinfo->comp_info[i].v_samp_factor`, are correct. Since these indicate the dimensions of the data you are supplying, it's wise to set them explicitly, rather than assuming the library's defaults are what you want.

To pass raw data to the library, call `jpeg_write_raw_data()` in place of `jpeg_write_scanlines()`. The two routines work similarly except that `jpeg_write_raw_data` takes a JSAMPIMAGE data array rather than JSAMPARRAY. The scanlines count passed to and returned from `jpeg_write_raw_data` is measured in terms of the component with the largest `v_samp_factor`.

`jpeg_write_raw_data()` processes one MCU row per call, which is to say `v_samp_factor*min_DCT_v_scaled_size` sample rows of each component. The passed `num_lines` value must be at least `max_v_samp_factor*min_DCT_v_scaled_size`, and the return value will be exactly that amount (or possibly some multiple of that amount, in future library versions). This is true even on the last call at the bottom of the image; don't forget to pad your data as necessary.

The required dimensions of the supplied data can be computed for each component as

```
cinfo->comp_info[i].width_in_blocks *  
cinfo->comp_info[i].DCT_h_scaled_size  samples per row  
cinfo->comp_info[i].height_in_blocks *  
cinfo->comp_info[i].DCT_v_scaled_size  rows in image
```

after `jpeg_start_compress()` has initialized those fields. If the valid data is smaller than this, it must be padded appropriately. For some sampling factors and image sizes, additional dummy DCT blocks are inserted to make the image a multiple of the MCU dimensions. The library creates such dummy blocks itself; it does not read them from your supplied data. Therefore you need never pad by more than `DCT_scaled_size` samples.

An example may help here. Assume 2h2v downsampling of YCbCr data, that is

```
cinfo->comp_info[0].h_samp_factor = 2  for Y  
cinfo->comp_info[0].v_samp_factor = 2  
cinfo->comp_info[1].h_samp_factor = 1  for Cb
```



```
cinfo->comp_info[1].v_samp_factor = 1
cinfo->comp_info[2].h_samp_factor = 1 for Cr
cinfo->comp_info[2].v_samp_factor = 1
```

and suppose that the nominal image dimensions (cinfo->image\_width and cinfo->image\_height) are 101x101 pixels. Then jpeg\_start\_compress() will compute downsampled\_width = 101 and width\_in\_blocks = 13 for Y, downsampled\_width = 51 and width\_in\_blocks = 7 for Cb and Cr (and the same for the height fields). You must pad the Y data to at least  $13*8 = 104$  columns and rows, the Cb/Cr data to at least  $7*8 = 56$  columns and rows. The MCU height is  $\max\_v\_samp\_factor = 2$  DCT rows so you must pass at least 16 scanlines on each call to jpeg\_write\_raw\_data(), which is to say 16 actual sample rows of Y and 8 each of Cb and Cr. A total of 7 MCU rows are needed, so you must pass a total of  $7*16 = 112$  "scanlines". The last DCT block row of Y data is dummy, so it doesn't matter what you pass for it in the data arrays, but the scanlines count must total up to 112 so that all of the Cb and Cr data gets passed.

Output suspension is supported with raw-data compression: if the data destination module suspends, jpeg\_write\_raw\_data() will return 0. In this case the same data rows must be passed again on the next call.

Decompression with raw data output implies bypassing all postprocessing: you cannot ask for color quantization, for instance. More seriously, you must deal with the color space and sampling factors present in the incoming file. If your application only handles, say, 2h1v YCbCr data, you must check for and fail on other color spaces or other sampling factors. The library will not convert to a different color space for you.

To obtain raw data output, set cinfo->raw\_data\_out = TRUE before jpeg\_start\_decompress() (it is set FALSE by jpeg\_read\_header()). Be sure to verify that the color space and sampling factors are ones you can handle. Then call jpeg\_read\_raw\_data() in place of jpeg\_read\_scanlines(). The decompression process is otherwise the same as usual.

jpeg\_read\_raw\_data() returns one MCU row per call, and thus you must pass a buffer of at least  $\max\_v\_samp\_factor * \min\_DCT\_v\_scaled\_size$  scanlines (scanline counting is the same as for raw-data compression). The buffer you pass must be large enough to hold the actual data plus padding to DCT-block boundaries. As with compression, any entirely dummy DCT blocks are not processed so you need not allocate space for them, but the total scanline count includes them. The above example of computing buffer dimensions for raw-data compression is equally valid for decompression.

Input suspension is supported with raw-data decompression: if the data source module suspends, jpeg\_read\_raw\_data() will return 0. You can also use buffered-image mode to read raw data in multiple passes.

Really raw data: DCT coefficients

-----

It is possible to read or write the contents of a JPEG file as raw DCT coefficients. This facility is mainly intended for use in lossless transcoding between different JPEG file formats. Other possible applications include lossless cropping of a JPEG image, lossless reassembly of a multi-strip or multi-tile TIFF/JPEG file into a single JPEG datastream, etc.

To read the contents of a JPEG file as DCT coefficients, open the file and do `jpeg_read_header()` as usual. But instead of calling `jpeg_start_decompress()` and `jpeg_read_scanlines()`, call `jpeg_read_coefficients()`. This will read the entire image into a set of virtual coefficient-block arrays, one array per component. The return value is a pointer to an array of virtual-array descriptors. Each virtual array can be accessed directly using the JPEG memory manager's `access_virt_barray` method (see Memory management, below, and also read `structure.txt`'s discussion of virtual array handling). Or, for simple transcoding to a different JPEG file format, the array list can just be handed directly to `jpeg_write_coefficients()`.

Each block in the block arrays contains quantized coefficient values in normal array order (not JPEG zigzag order). The block arrays contain only DCT blocks containing real data; any entirely-dummy blocks added to fill out interleaved MCUs at the right or bottom edges of the image are discarded during reading and are not stored in the block arrays. (The size of each block array can be determined from the `width_in_blocks` and `height_in_blocks` fields of the component's `comp_info` entry.) This is also the data format expected by `jpeg_write_coefficients()`.

When you are done using the virtual arrays, call `jpeg_finish_decompress()` to release the array storage and return the decompression object to an idle state; or just call `jpeg_destroy()` if you don't need to reuse the object.

If you use a suspending data source, `jpeg_read_coefficients()` will return NULL if it is forced to suspend; a non-NULL return value indicates successful completion. You need not test for a NULL return value when using a non-suspending data source.

It is also possible to call `jpeg_read_coefficients()` to obtain access to the decoder's coefficient arrays during a normal decode cycle in buffered-image mode. This frammish might be useful for progressively displaying an incoming image and then re-encoding it without loss. To do this, decode in buffered-image mode as discussed previously, then call `jpeg_read_coefficients()` after the last `jpeg_finish_output()` call. The arrays will be available for your use until you call `jpeg_finish_decompress()`.

To write the contents of a JPEG file as DCT coefficients, you must provide the DCT coefficients stored in virtual block arrays. You can either pass block arrays read from an input JPEG file by `jpeg_read_coefficients()`, or allocate virtual arrays from the JPEG compression object and fill them yourself. In either case, `jpeg_write_coefficients()` is substituted for `jpeg_start_compress()` and `jpeg_write_scanlines()`. Thus the sequence is

- \* Create compression object
- \* Set all compression parameters as necessary
- \* Request virtual arrays if needed
- \* `jpeg_write_coefficients()`
- \* `jpeg_finish_compress()`
- \* Destroy or re-use compression object

`jpeg_write_coefficients()` is passed a pointer to an array of virtual block array descriptors; the number of arrays is equal to `cinfo.num_components`.

The virtual arrays need only have been requested, not realized, before `jpeg_write_coefficients()` is called. A side-effect of `jpeg_write_coefficients()` is to realize any virtual arrays that have been requested from the compression object's memory manager. Thus, when obtaining the virtual arrays from the compression object, you should fill the arrays after calling `jpeg_write_coefficients()`. The data is actually written out when you call `jpeg_finish_compress()`; `jpeg_write_coefficients()` only writes the file header.

When writing raw DCT coefficients, it is crucial that the JPEG quantization tables and sampling factors match the way the data was encoded, or the resulting file will be invalid. For transcoding from an existing JPEG file, we recommend using `jpeg_copy_critical_parameters()`. This routine initializes all the compression parameters to default values (like `jpeg_set_defaults()`), then copies the critical information from a source decompression object. The decompression object should have just been used to read the entire JPEG input file --- that is, it should be awaiting `jpeg_finish_decompress()`.

`jpeg_write_coefficients()` marks all tables stored in the compression object as needing to be written to the output file (thus, it acts like `jpeg_start_compress(cinfo, TRUE)`). This is for safety's sake, to avoid emitting abbreviated JPEG files by accident. If you really want to emit an abbreviated JPEG file, call `jpeg_suppress_tables()`, or set the tables' individual `sent_table` flags, between calling `jpeg_write_coefficients()` and `jpeg_finish_compress()`.

#### Progress monitoring

-----

Some applications may need to regain control from the JPEG library every so often. The typical use of this feature is to produce a percent-done bar or other progress display. (For a simple example, see `cjpeg.c` or `djpeg.c`.)

Although you do get control back frequently during the data-transferring pass (the `jpeg_read_scanlines` or `jpeg_write_scanlines` loop), any additional passes will occur inside `jpeg_finish_compress` or `jpeg_start_decompress`; those routines may take a long time to execute, and you don't get control back until they are done.

You can define a progress-monitor routine which will be called periodically by the library. No guarantees are made about how often this call will occur, so we don't recommend you use it for mouse tracking or anything like that. At present, a call will occur once per MCU row, scanline, or sample row group, whichever unit is convenient for the current processing mode; so the wider the image, the longer the time between calls. During the data transferring pass, only one call occurs per call of `jpeg_read_scanlines` or `jpeg_write_scanlines`, so don't pass a large number of scanlines at once if you want fine resolution in the progress count. (If you really need to use the callback mechanism for time-critical tasks like mouse tracking, you could insert additional calls inside some of the library's inner loops.)

To establish a progress-monitor callback, create a struct `jpeg_progress_mgr`, fill in its `progress_monitor` field with a pointer to your callback routine, and set `cinfo->progress` to point to the struct. The callback will be called whenever `cinfo->progress` is non-NULL. (This pointer is set to NULL by `jpeg_create_compress` or `jpeg_create_decompress`; the library will not change it thereafter. So if you allocate dynamic storage for the progress struct, make sure it will live as long as the JPEG object does. Allocating from the JPEG memory manager with lifetime `JPOOL_PERMANENT` will work nicely.) You can use the same callback routine for both compression and decompression.

The `jpeg_progress_mgr` struct contains four fields which are set by the library:

```
long pass_counter; /* work units completed in this pass */
long pass_limit; /* total number of work units in this pass */
int completed_passes; /* passes completed so far */
int total_passes; /* total number of passes expected */
```

During any one pass, `pass_counter` increases from 0 up to (not including) `pass_limit`; the step size is usually but not necessarily 1. The `pass_limit` value may change from one pass to another. The expected total number of passes is in `total_passes`, and the number of passes already completed is in `completed_passes`. Thus the fraction of work completed may be estimated as

$$\frac{\text{completed\_passes} + (\text{pass\_counter}/\text{pass\_limit})}{\text{total\_passes}}$$

ignoring the fact that the passes may not be equal amounts of work.

When decompressing, `pass_limit` can even change within a pass, because it depends on the number of scans in the JPEG file, which isn't always known in advance. The computed fraction-of-work-done may jump suddenly (if the library discovers it has overestimated the number of scans) or even decrease (in the opposite case). It is not wise to put great faith in the work estimate.

When using the decompressor's buffered-image mode, the progress monitor work estimate is likely to be completely unhelpful, because the library has no way to know how many output passes will be demanded of it. Currently, the library sets `total_passes` based on the assumption that there will be one more output pass if the input file end hasn't yet been read (`jpeg_input_complete()` isn't TRUE), but no more output passes if the file end has been reached when the output pass is started. This means that `total_passes` will rise as additional output passes are requested. If you have a way of determining the input file size, estimating progress based on the fraction of the file that's been read will probably be more useful than using the library's value.

## Memory management

-----

This section covers some key facts about the JPEG library's built-in memory manager. For more info, please read `structure.txt`'s section about the memory manager, and consult the source code if necessary.

All memory and temporary file allocation within the library is done via the memory manager. If necessary, you can replace the "back end" of the memory manager to control allocation yourself (for example, if you don't want the library to use `malloc()` and `free()` for some reason).

Some data is allocated "permanently" and will not be freed until the JPEG object is destroyed. Most data is allocated "per image" and is freed by `jpeg_finish_compress`, `jpeg_finish_decompress`, or `jpeg_abort`. You can call the memory manager yourself to allocate structures that will automatically be freed at these times. Typical code for this is

```
ptr = (*cinfo->mem->alloc_small) ((j_common_ptr) cinfo, JPOOL_IMAGE, size);
```

Use `JPOOL_PERMANENT` to get storage that lasts as long as the JPEG object. Use `alloc_large` instead of `alloc_small` for anything bigger than a few Kbytes. There are also `alloc_sarray` and `alloc_barray` routines that automatically build 2-D sample or block arrays.

The library's minimum space requirements to process an image depend on the image's width, but not on its height, because the library ordinarily works with "strip" buffers that are as wide as the image but just a few rows high. Some operating modes (eg, two-pass color quantization) require full-image buffers. Such buffers are treated as "virtual arrays": only the current strip need be in memory, and the rest can be swapped out to a temporary file.

If you use the simplest memory manager back end (`jmemnobs.c`), then no temporary files are used; virtual arrays are simply `malloc()`'d. Images bigger than memory can be processed only if your system supports virtual memory. The other memory manager back ends support temporary files of various flavors and thus work in machines without virtual memory. They may also be useful on

Unix machines if you need to process images that exceed available swap space.

When using temporary files, the library will make the in-memory buffers for its virtual arrays just big enough to stay within a "maximum memory" setting. Your application can set this limit by setting `cinfo->mem->max_memory_to_use` after creating the JPEG object. (Of course, there is still a minimum size for the buffers, so the max-memory setting is effective only if it is bigger than the minimum space needed.) If you allocate any large structures yourself, you must allocate them before `jpeg_start_compress()` or `jpeg_start_decompress()` in order to have them counted against the max memory limit. Also keep in mind that space allocated with `alloc_small()` is ignored, on the assumption that it's too small to be worth worrying about; so a reasonable safety margin should be left when setting `max_memory_to_use`.

If you use the `jmemname.c` or `jmemdos.c` memory manager back end, it is important to clean up the JPEG object properly to ensure that the temporary files get deleted. (This is especially crucial with `jmemdos.c`, where the "temporary files" may be extended-memory segments; if they are not freed, DOS will require a reboot to recover the memory.) Thus, with these memory managers, it's a good idea to provide a signal handler that will trap any early exit from your program. The handler should call either `jpeg_abort()` or `jpeg_destroy()` for any active JPEG objects. A handler is not needed with `jmemnobs.c`, and shouldn't be necessary with `jmemansi.c` or `jmemmac.c` either, since the C library is supposed to take care of deleting files made with `tmpfile()`.

## Memory usage

-----

Working memory requirements while performing compression or decompression depend on image dimensions, image characteristics (such as colorspace and JPEG process), and operating mode (application-selected options).

As of v6b, the decompressor requires:

1. About 24K in more-or-less-fixed-size data. This varies a bit depending on operating mode and image characteristics (particularly color vs. grayscale), but it doesn't depend on image dimensions.
2. Strip buffers (of size proportional to the image width) for IDCT and upsampling results. The worst case for commonly used sampling factors is about 34 bytes \* width in pixels for a color image. A grayscale image only needs about 8 bytes per pixel column.
3. A full-image DCT coefficient buffer is needed to decode a multi-scan JPEG file (including progressive JPEGs), or whenever you select buffered-image mode. This takes 2 bytes/coefficient. At typical 2x2 sampling, that's 3 bytes per pixel for a color image. Worst case (1x1 sampling) requires 6 bytes/pixel. For grayscale, figure 2 bytes/pixel.
4. To perform 2-pass color quantization, the decompressor also needs a

128K color lookup table and a full-image pixel buffer (3 bytes/pixel). This does not count any memory allocated by the application, such as a buffer to hold the final output image.

The above figures are valid for 8-bit JPEG data precision and a machine with 32-bit ints. For 9-bit to 12-bit JPEG data, double the size of the strip buffers and quantization pixel buffer. The "fixed-size" data will be somewhat smaller with 16-bit ints, larger with 64-bit ints. Also, CMYK or other unusual color spaces will require different amounts of space.

The full-image coefficient and pixel buffers, if needed at all, do not have to be fully RAM resident; you can have the library use temporary files instead when the total memory usage would exceed a limit you set. (But if your OS supports virtual memory, it's probably better to just use `jmemnobs` and let the OS do the swapping.)

The compressor's memory requirements are similar, except that it has no need for color quantization. Also, it needs a full-image DCT coefficient buffer if Huffman-table optimization is asked for, even if progressive mode is not requested.

If you need more detailed information about memory usage in a particular situation, you can enable the `MEM_STATS` code in `jmemmgr.c`.

#### Library compile-time options

-----

A number of compile-time options are available by modifying `jmorecfg.h`.

The IJG code currently supports 8-bit to 12-bit sample data precision by defining `BITS_IN_JSAMPLE` as 8, 9, 10, 11, or 12.

Note that a value larger than 8 causes `JSAMPLE` to be larger than a char, so it affects the surrounding application's image data.

The sample applications `cjpeg` and `djpeg` can support deeper than 8-bit data only for PPM and GIF file formats; you must disable the other file formats to compile a 9-bit to 12-bit `cjpeg` or `djpeg`. (`install.txt` has more information about that.)

Run-time selection and conversion of data precision are currently not supported and may be added later.

Exception: The transcoding part (`jpegtran`) supports all settings in a single instance, since it operates on the level of DCT coefficients and not sample values.

(If you need to include an 8-bit library and a 9-bit to 12-bit library for compression or decompression in a single application, you could probably do it by defining `NEED_SHORT_EXTERNAL_NAMES` for just one of the copies. You'd have to access the 8-bit and the 9-bit to 12-bit copies from separate application source files. This is untested ... if you try it, we'd like to

hear whether it works!)

Note that the standard Huffman tables are only valid for 8-bit data precision. If you selected more than 8-bit data precision, cjpeg uses arithmetic coding by default. The Huffman encoder normally uses entropy optimization to compute usable tables for higher precision. Otherwise, you'll have to supply different default Huffman tables. You may also want to supply your own DCT quantization tables; the existing quality-scaling code has been developed for 8-bit use, and probably doesn't generate especially good tables for 9-bit to 12-bit.

The maximum number of components (color channels) in the image is determined by MAX\_COMPONENTS. The JPEG standard allows up to 255 components, but we expect that few applications will need more than four or so.

On machines with unusual data type sizes, you may be able to improve performance or reduce memory space by tweaking the various typedefs in jmorecfg.h. In particular, on some RISC CPUs, access to arrays of "short"s is quite slow; consider trading memory for speed by making JCOEF, INT16, and UINT16 be "int" or "unsigned int". UINT8 is also a candidate to become int. You probably don't want to make JSAMPLE be int unless you have lots of memory to burn.

You can reduce the size of the library by compiling out various optional functions. To do this, undefine xxx\_SUPPORTED symbols as necessary.

You can also save a few K by not having text error messages in the library; the standard error message table occupies about 5Kb. This is particularly reasonable for embedded applications where there's no good way to display a message anyway. To do this, remove the creation of the message table (jpeg\_std\_message\_table[]) from jerror.c, and alter format\_message to do something reasonable without it. You could output the numeric value of the message code number, for example. If you do this, you can also save a couple more K by modifying the TRACEMSn() macros in jerror.h to expand to nothing; you don't need trace capability anyway, right?

#### Portability considerations

-----

The JPEG library has been written to be extremely portable; the sample applications cjpeg and djpeg are slightly less so. This section summarizes the design goals in this area. (If you encounter any bugs that cause the library to be less portable than is claimed here, we'd appreciate hearing about them.)

The code works fine on ANSI C, C++, and pre-ANSI C compilers, using any of the popular system include file setups, and some not-so-popular ones too.



See install.txt for configuration procedures.

The code is not dependent on the exact sizes of the C data types. As distributed, we make the assumptions that

char is at least 8 bits wide

short is at least 16 bits wide

int is at least 16 bits wide

long is at least 32 bits wide

(These are the minimum requirements of the ANSI C standard.) Wider types will work fine, although memory may be used inefficiently if char is much larger than 8 bits or short is much bigger than 16 bits. The code should work equally well with 16- or 32-bit ints.

In a system where these assumptions are not met, you may be able to make the code work by modifying the typedefs in jmorecfg.h. However, you will probably have difficulty if int is less than 16 bits wide, since references to plain int abound in the code.

char can be either signed or unsigned, although the code runs faster if an unsigned char type is available. If char is wider than 8 bits, you will need to redefine JOCTET and/or provide custom data source/destination managers so that JOCTET represents exactly 8 bits of data on external storage.

The JPEG library proper does not assume ASCII representation of characters. But some of the image file I/O modules in cjpeg/djpeg do have ASCII dependencies in file-header manipulation; so does cjpeg's select\_file\_type() routine.

The JPEG library does not rely heavily on the C library. In particular, C stdio is used only by the data source/destination modules and the error handler, all of which are application-replaceable. (cjpeg/djpeg are more heavily dependent on stdio.) malloc and free are called only from the memory manager "back end" module, so you can use a different memory allocator by replacing that one file.

The code generally assumes that C names must be unique in the first 15 characters. However, global function names can be made unique in the first 6 characters by defining NEED\_SHORT\_EXTERNAL\_NAMES.

More info about porting the code may be gleaned by reading jconfig.txt, jmorecfg.h, and jinclude.h.

Notes for MS-DOS implementors

-----

The IJG code is designed to work efficiently in 80x86 "small" or "medium" memory models (i.e., data pointers are 16 bits unless explicitly declared

"far"; code pointers can be either size). You may be able to use small model to compile cjpeg or djpeg by itself, but you will probably have to use medium model for any larger application. This won't make much difference in performance. You *will* take a noticeable performance hit if you use a large-data memory model (perhaps 10%-25%), and you should avoid "huge" model if at all possible.

The JPEG library typically needs 2Kb-3Kb of stack space. It will also malloc about 20K-30K of near heap space while executing (and lots of far heap, but that doesn't count in this calculation). This figure will vary depending on selected operating mode, and to a lesser extent on image size. There is also about 5Kb-6Kb of constant data which will be allocated in the near data segment (about 4Kb of this is the error message table). Thus you have perhaps 20K available for other modules' static data and near heap space before you need to go to a larger memory model. The C library's static data will account for several K of this, but that still leaves a good deal for your needs. (If you are tight on space, you could reduce the sizes of the I/O buffers allocated by jdatasrc.c and jdatadst.c, say from 4K to 1K. Another possibility is to move the error message table to far memory; this should be doable with only localized hacking on jerror.c.)

About 2K of the near heap space is "permanent" memory that will not be released until you destroy the JPEG object. This is only an issue if you save a JPEG object between compression or decompression operations.

Far data space may also be a tight resource when you are dealing with large images. The most memory-intensive case is decompression with two-pass color quantization, or single-pass quantization to an externally supplied color map. This requires a 128Kb color lookup table plus strip buffers amounting to about 40 bytes per column for typical sampling ratios (eg, about 25600 bytes for a 640-pixel-wide image). You may not be able to process wide images if you have large data structures of your own.

Of course, all of these concerns vanish if you use a 32-bit flat-memory-model compiler, such as DJGPP or Watcom C. We highly recommend flat model if you can use it; the JPEG library is significantly faster in flat model.

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/libjpeg.txt  
No license file was found, but licenses were detected in source scan.
```

```
/*
```

```
* jmemmgr.c
```

```
*
```

```
* Copyright (C) 1991-1997, Thomas G. Lane.
```

```
* Modified 2011-2019 by Guido Vollbeding.
```

```
* This file is part of the Independent JPEG Group's software.
```

```
* For conditions of distribution and use, see the accompanying README file.
```

\*  
\* This file contains the JPEG system-independent memory management  
\* routines. This code is usable across a wide variety of machines; most  
\* of the system dependencies have been isolated in a separate file.  
\* The major functions provided here are:  
\* \* pool-based allocation and freeing of memory;  
\* \* policy decisions about how to divide available memory among the  
\* virtual arrays;  
\* \* control logic for swapping virtual arrays between main memory and  
\* backing storage.  
\* The separate system-dependent file provides the actual backing-storage  
\* access code, and it contains the policy decision about how much total  
\* main memory to use.  
\* This file is system-dependent in the sense that some of its functions  
\* are unnecessary in some systems. For example, if there is enough virtual  
\* memory so that backing storage will never be used, much of the virtual  
\* array control logic could be removed. (Of course, if you have that much  
\* memory then you shouldn't care about a little bit of unused code...)  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jmemmgr.c

No license file was found, but licenses were detected in source scan.

INSTALLATION INSTRUCTIONS for the Independent JPEG Group's JPEG software

Copyright (C) 1991-2021, Thomas G. Lane, Guido Vollbeding.

This file is part of the Independent JPEG Group's software.

For conditions of distribution and use, see the accompanying README file.

This file explains how to configure and install the IJG software. We have tried to make this software extremely portable and flexible, so that it can be adapted to almost any environment. The downside of this decision is that the installation process is complicated. We have provided shortcuts to simplify the task on common systems. But in any case, you will need at least a little familiarity with C programming and program build procedures for your system.

If you are only using this software as part of a larger program, the larger program's installation procedure may take care of configuring the IJG code. For example, Ghostscript's installation script will configure the IJG code. You don't need to read this file if you just want to compile Ghostscript.

If you are on a Unix machine, you may not need to read this file at all.

Try doing

./configure

make

make test

If that doesn't complain, do  
make install  
(better do "make -n install" first to see if the makefile will put the files  
where you want them). Read further if you run into snags or want to customize  
the code for your system.

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## BEFORE YOU START

=====

Before installing the software you must unpack the distributed source code.  
Since you are reading this file, you have probably already succeeded in this  
task. However, there is a potential for error if you needed to convert the  
files to the local standard text file format (for example, if you are on  
MS-DOS you may have converted LF end-of-line to CR/LF). You must apply  
such conversion to all the files EXCEPT those whose names begin with "test".  
The test files contain binary data; if you change them in any way then the  
self-test will give bad results.

Please check the last section of this file to see if there are hints for the  
specific machine or compiler you are using.

## CONFIGURING THE SOFTWARE

=====

To configure the IJG code for your system, you need to create two files:  
\* jconfig.h: contains values for system-dependent #define symbols.  
\* Makefile: controls the compilation process.  
(On a non-Unix machine, you may create "project files" or some other  
substitute for a Makefile. jconfig.h is needed in any environment.)

We provide three different ways to generate these files:

- \* On a Unix system, you can just run the "configure" script.
- \* We provide sample jconfig files and makefiles for popular machines; if your machine matches one of the samples, just copy the right sample files to jconfig.h and Makefile.
- \* If all else fails, read the instructions below and make your own files.

Configuring the software using the automatic "configure" script

-----  
If you are on a Unix machine, you can just type

```
./configure
```

and let the configure script construct appropriate configuration files.

If you're using "csh" on an old version of System V, you might need to type

```
sh configure
```

instead to prevent csh from trying to execute configure itself.

Expect configure to run for a few minutes, particularly on slower machines; it works by compiling a series of test programs.

Configure was created with GNU Autoconf and it follows the usual conventions for GNU configure scripts. It makes a few assumptions that you may want to override. You can do this by providing optional switches to configure:

- \* Configure will build both static and shared libraries, if possible.

If you want to build libjpeg only as a static library, say

```
./configure --disable-shared
```

If you want to build libjpeg only as a shared library, say

```
./configure --disable-static
```

Configure uses GNU libtool to take care of system-dependent shared library building methods.

- \* Configure will use gcc (GNU C compiler) if it's available, otherwise cc.

To force a particular compiler to be selected, use the CC option, for example

```
./configure CC='cc'
```

The same method can be used to include any unusual compiler switches.

For example, on HP-UX you probably want to say

```
./configure CC='cc -Aa'
```

to get HP's compiler to run in ANSI mode.

- \* The default CFLAGS setting is "-g" for non-gcc compilers, "-g -O2" for gcc.

You can override this by saying, for example,

```
./configure CFLAGS='-O2'
```

if you want to compile without debugging support.

- \* Configure will set up the makefile so that "make install" will install files into /usr/local/bin, /usr/local/man, etc. You can specify an installation prefix other than "/usr/local" by giving configure the option "--prefix=PATH".

\* If you don't have a lot of swap space, you may need to enable the IJG software's internal virtual memory mechanism. To do this, give the option "--enable-maxmem=N" where N is the default maxmemory limit in megabytes. This is discussed in more detail under "Selecting a memory manager", below. You probably don't need to worry about this on reasonably-sized Unix machines, unless you plan to process very large images.

Configure has some other features that are useful if you are cross-compiling or working in a network of multiple machine types; but if you need those features, you probably already know how to use them.

Configuring the software using one of the supplied jconfig and makefile files

-----  
If you have one of these systems, you can just use the provided configuration files:

Makefile jconfig file System and/or compiler

makefile.manx jconfig.manx Amiga, Manx Aztec C  
makefile.sas jconfig.sas Amiga, SAS C  
makeproj.mac jconfig.mac Apple Macintosh, Metrowerks CodeWarrior  
mak\*jpeg.st jconfig.st Atari ST/STE/TT, Pure C or Turbo C  
makefile.bcc jconfig.bcc MS-DOS or OS/2, Borland C  
makefile.dj jconfig.dj MS-DOS, DJGPP (Delorie's port of GNU C)  
makefile.mc6 jconfig.mc6 MS-DOS, Microsoft C (16-bit only)  
makefile.wat jconfig.wat MS-DOS, OS/2, or Windows NT, Watcom C  
makefile.vc jconfig.vc Windows, MS Visual C++  
makefile.vs jconfig.vc Windows, MS Visual C++ 6 Developer Studio  
make\*.vc6  
makefile.vs jconfig.vc Windows, Visual Studio 2019 Version 16  
make\*.v16  
makefile.vs jconfig.vc Windows, Visual Studio 2022 Version 17  
make\*.v16  
make\*.v17  
makefile.b32 jconfig.vc Windows, Borland C++ 32-bit (bcc32)  
makefile.mms jconfig.vms Digital VMS, with MMS software  
makefile.vms jconfig.vms Digital VMS, without MMS software

Copy the proper jconfig file to jconfig.h and the makefile to Makefile (or whatever your system uses as the standard makefile name). For more info see the appropriate system-specific hints section near the end of this file.

Configuring the software by hand

-----

First, generate a jconfig.h file. If you are moderately familiar with C, the comments in jconfig.txt should be enough information to do this; just copy jconfig.txt to jconfig.h and edit it appropriately. Otherwise, you may prefer to use the ckconfig.c program. You will need to compile and execute ckconfig.c by hand --- we hope you know at least enough to do that. ckconfig.c may not compile the first try (in fact, the whole idea is for it to fail if anything is going to). If you get compile errors, fix them by editing ckconfig.c according to the directions given in ckconfig.c. Once you get it to run, it will write a suitable jconfig.h file, and will also print out some advice about which makefile to use.

You may also want to look at the canned jconfig files, if there is one for a system similar to yours.

Second, select a makefile and copy it to Makefile (or whatever your system uses as the standard makefile name). The most generic makefiles we provide are

makefile.ansi: if your C compiler supports function prototypes

makefile.unix: if not.

(You have function prototypes if ckconfig.c put "#define HAVE\_PROTOTYPES" in jconfig.h.) You may want to start from one of the other makefiles if there is one for a system similar to yours.

Look over the selected Makefile and adjust options as needed. In particular you may want to change the CC and CFLAGS definitions. For instance, if you are using GCC, set CC=gcc. If you had to use any compiler switches to get ckconfig.c to work, make sure the same switches are in CFLAGS.

If you are on a system that doesn't use makefiles, you'll need to set up project files (or whatever you do use) to compile all the source files and link them into executable files cjpeg, djpeg, jpegtran, rdjpgcom, and wrjpgcom. See the file lists in any of the makefiles to find out which files go into each program. Note that the provided makefiles all make a "library" file libjpeg first, but you don't have to do that if you don't want to; the file lists identify which source files are actually needed for compression, decompression, or both. As a last resort, you can make a batch script that just compiles everything and links it all together; makefile.vms is an example of this (it's for VMS systems that have no make-like utility).

Here are comments about some specific configuration decisions you'll need to make:

Command line style

-----

These programs can use a Unix-like command line style which supports redirection and piping, like this:

```
cjpeg inputfile >outputfile
cjpeg <inputfile >outputfile
source program | cjpeg >outputfile
```

The simpler "two file" command line style is just

```
cjpeg inputfile outputfile
```

You may prefer the two-file style, particularly if you don't have pipes.

You **MUST** use two-file style on any system that doesn't cope well with binary data fed through stdin/stdout; this is true for some MS-DOS compilers, for example. If you're not on a Unix system, it's safest to assume you need two-file style. (But if your compiler provides either the Posix-standard `fdopen()` library routine or a Microsoft-compatible `setmode()` routine, you can safely use the Unix command line style, by defining `USE_FDOPEN` or `USE_SETMODE` respectively.)

To use the two-file style, make `jconfig.h` say `#define TWO_FILE_COMMANDLINE`.

#### Selecting a memory manager

-----

The IJG code is capable of working on images that are too big to fit in main memory; data is swapped out to temporary files as necessary. However, the code to do this is rather system-dependent. We provide five different memory managers:

- \* `jmemansi.c` This version uses the ANSI-standard library routine `tmpfile()`, which not all non-ANSI systems have. On some systems `tmpfile()` may put the temporary file in a non-optimal location; if you don't like what it does, use `jmemname.c`.
- \* `jmemname.c` This version creates named temporary files. For anything except a Unix machine, you'll need to configure the `select_file_name()` routine appropriately; see the comments near the head of `jmemname.c`. If you use this version, define `NEED_SIGNAL_CATCHER` in `jconfig.h` to make sure the temp files are removed if the program is aborted.
- \* `jmemnobs.c` (That stands for No Backing Store :-).) This will compile on almost any system, but it assumes you have enough main memory or virtual memory to hold the biggest images you work with.
- \* `jmemdos.c` This should be used with most 16-bit MS-DOS compilers. See the system-specific notes about MS-DOS for more info. **IMPORTANT:** if you use this, define `USE_MSDOS_MEMMGR` in `jconfig.h`, and include the assembly file `jmemdosa.asm` in the programs. The supplied makefiles and `jconfig` files for 16-bit MS-DOS compilers already do both.



\* `jmemmac.c` Custom version for Apple Macintosh; see the system-specific notes for Macintosh for more info.

To use a particular memory manager, change the `SYSDEPMEM` variable in your makefile to equal the corresponding object file name (for example, `jmemansi.o` or `jmemansi.obj` for `jmemansi.c`).

If you have plenty of (real or virtual) main memory, just use `jmemnobs.c`.

"Plenty" means about ten bytes for every pixel in the largest images you plan to process, so a lot of systems don't meet this criterion.

If yours doesn't, try `jmemansi.c` first. If that doesn't compile, you'll have to use `jmemname.c`; be sure to adjust `select_file_name()` for local conditions. You may also need to change `unlink()` to `remove()` in `close_backing_store()`.

Except with `jmemnobs.c` or `jmemmac.c`, you need to adjust the `DEFAULT_MAX_MEM` setting to a reasonable value for your system (either by adding a `#define` for `DEFAULT_MAX_MEM` to `jconfig.h`, or by adding a `-D` switch to the Makefile). This value limits the amount of data space the program will attempt to allocate. Code and static data space isn't counted, so the actual memory needs for `cjpeg` or `djpeg` are typically 100 to 150Kb more than the max-memory setting. Larger max-memory settings reduce the amount of I/O needed to process a large image, but too large a value can result in "insufficient memory" failures. On most Unix machines (and other systems with virtual memory), just set `DEFAULT_MAX_MEM` to several million and forget it. At the other end of the spectrum, for MS-DOS machines you probably can't go much above 300K to 400K. (On MS-DOS the value refers to conventional memory only. Extended/expanded memory is handled separately by `jmemdos.c`.)

## BUILDING THE SOFTWARE

=====

Now you should be able to compile the software. Just say "make" (or whatever's necessary to start the compilation). Have a cup of coffee.

Here are some things that could go wrong:

If your compiler complains about undefined structures, you should be able to shut it up by putting `#define INCOMPLETE_TYPES_BROKEN` in `jconfig.h`.

If you have trouble with missing system include files or inclusion of the wrong ones, read `jinclude.h`. This shouldn't happen if you used `configure` or `ckconfig.c` to set up `jconfig.h`.

There are a fair number of routines that do not use all of their parameters; some compilers will issue warnings about this, which you can ignore. There are also a few configuration checks that may give "unreachable code" warnings. Any other warning deserves investigation.

If you don't have a `getenv()` library routine, define `NO_GETENV`.

Also see the system-specific hints, below.

## TESTING THE SOFTWARE

=====

As a quick test of functionality we've included a small sample image in several forms:

`testorig.jpg` Starting point for the `djpeg` tests.

`testing.ppm` The output of `djpeg testorig.jpg`

`testing.gif` The output of `djpeg -gif testorig.jpg`

`testing.bmp` The output of `djpeg -bmp -colors 256 testorig.jpg`

`testing.jpg` The output of `cjpeg testing.ppm`

`testprog.jpg` Progressive-mode equivalent of `testorig.jpg`.

`testingp.jpg` The output of `cjpeg -progressive -optimize testing.ppm`

(The first- and second-generation `.jpg` files aren't identical since the default compression parameters are lossy.) If you can generate duplicates of the `testing*` files then you probably have working programs.

With most of the makefiles, "make test" will perform the necessary comparisons.

If you're using a makefile that doesn't provide the test option, run `djpeg` and `cjpeg` by hand and compare the output files to `testing*` with whatever binary file comparison tool you have. The files should be bit-for-bit identical.

If the programs complain "MAX\_ALLOC\_CHUNK is wrong, please fix", then you need to reduce `MAX_ALLOC_CHUNK` to a value that fits in `type size_t`. Try adding "`#define MAX_ALLOC_CHUNK 65520L`" to `jconfig.h`. A less likely configuration error is "ALIGN\_TYPE is wrong, please fix": defining `ALIGN_TYPE` as long should take care of that one.

If the `cjpeg` test run fails with "Missing Huffman code table entry", it's a good bet that you needed to define `RIGHT_SHIFT_IS_UNSIGNED`. Go back to the configuration step and run `ckconfig.c`. (This is a good plan for any other test failure, too.)

If you are using Unix (one-file) command line style on a non-Unix system, it's a good idea to check that binary I/O through `stdin/stdout` actually works. You should get the same results from "`djpeg <testorig.jpg >out.ppm`" as from "`djpeg -outfile out.ppm testorig.jpg`". Note that the makefiles all use the latter style and therefore do not exercise `stdin/stdout`! If this check fails, try recompiling with `USE_SETMODE` or `USE_FDOPEN` defined. If it still doesn't work, better use two-file style.

If you chose a memory manager other than `jmemnobs.c`, you should test that temporary-file usage works. Try `"djpeg -bmp -colors 256 -max 0 testorig.jpg"` and make sure its output matches `testimg.bmp`. If you have any really large images handy, try compressing them with `-optimize` and/or decompressing with `-colors 256` to make sure your `DEFAULT_MAX_MEM` setting is not too large.

NOTE: this is far from an exhaustive test of the JPEG software; some modules, such as 1-pass color quantization, are not exercised at all. It's just a quick test to give you some confidence that you haven't missed something major.

## INSTALLING THE SOFTWARE

=====

Once you're done with the above steps, you can install the software by copying the executable files (`cjpeg`, `djpeg`, `jpegtran`, `rdjpgcom`, and `wrjpgcom`) to wherever you normally install programs. On Unix systems, you'll also want to put the man pages (`cjpeg.1`, `djpeg.1`, `jpegtran.1`, `rdjpgcom.1`, `wrjpgcom.1`) in the man-page directory. The pre-fab makefiles don't support this step since there's such a wide variety of installation procedures on different systems.

If you generated a Makefile with the "configure" script, you can just say  
`make install`  
to install the programs and their man pages into the standard places. (You'll probably need to be root to do this.) We recommend first saying  
`make -n install`  
to see where configure thought the files should go. You may need to edit the Makefile, particularly if your system's conventions for man page filenames don't match what configure expects.

If you want to install the IJG library itself, for use in compiling other programs besides ours, then you need to put the four include files  
`jpeglib.h` `jerror.h` `jconfig.h` `jmorecfg.h`  
into your include-file directory, and put the library file `libjpeg.a` (extension may vary depending on system) wherever library files go. If you generated a Makefile with "configure", it will do what it thinks is the right thing if you say  
`make install-lib`

## OPTIONAL STUFF

=====

Progress monitor:

If you like, you can `#define` `PROGRESS_REPORT` (in `jconfig.h`) to enable display of percent-done progress reports. The routine provided in `cdjpeg.c` merely prints percentages to `stderr`, but you can customize it to do something fancier.

Utah RLE file format support:

We distribute the software with support for RLE image files (Utah Raster Toolkit format) disabled, because the RLE support won't compile without the Utah library. If you have URT version 3.1 or later, you can enable RLE support as follows:

1. `#define` `RLE_SUPPORTED` in `jconfig.h`.
2. Add a `-I` option to `CFLAGS` in the Makefile for the directory containing the URT `.h` files (typically the "include" subdirectory of the URT distribution).
3. Add `-L... -lrle` to `LDLIBS` in the Makefile, where ... specifies the directory containing the URT "librle.a" file (typically the "lib" subdirectory of the URT distribution).

Support for 9-bit to 12-bit deep pixel data:

The IJG code currently allows 8, 9, 10, 11, or 12 bits sample data precision. (For color, this means 8 to 12 bits per channel, of course.) If you need to work with deeper than 8-bit data, you can compile the IJG code for 9-bit to 12-bit operation.

To do so:

1. In `jmorecfg.h`, define `BITS_IN_JSAMPLE` as 9, 10, 11, or 12 rather than 8.
2. In `jconfig.h`, undefine `BMP_SUPPORTED`, `RLE_SUPPORTED`, and `TARGA_SUPPORTED`, because the code for those formats doesn't handle deeper than 8-bit data and won't even compile. (The PPM code does work, as explained below. The GIF code works too; it scales 8-bit GIF data to and from 12-bit depth automatically.)
3. Compile. Don't expect "make test" to pass, since the supplied test files are for 8-bit data.

Currently, 9-bit to 12-bit support does not work on 16-bit-int machines.

Run-time selection and conversion of data precision are currently not supported and may be added later.

Exception: The transcoding part (`jpegtran`) supports all settings in a single instance, since it operates on the level of DCT coefficients and not sample values.

The PPM reader (`rdppm.c`) can read deeper than 8-bit data from either text-format or binary-format PPM and PGM files. Binary-format PPM/PGM files which have a `maxval` greater than 255 are assumed to use 2 bytes per sample, MSB first (big-endian order). As of early 1995, 2-byte binary format is not officially supported by the PBMPLUS library, but it is expected that a

future release of PBMPLUS will support it. Note that the PPM reader will read files of any maxval regardless of the BITS\_IN\_JSAMPLE setting; incoming data is automatically rescaled to maxval=MAXJSAMPLE as appropriate for the cjpeg bit depth.

The PPM writer (wrppm.c) will normally write 2-byte binary PPM or PGM format, maxval=MAXJSAMPLE, when compiled with BITS\_IN\_JSAMPLE>8. Since this format is not yet widely supported, you can disable it by compiling wrppm.c with PPM\_NORAWWORD defined; then the data is scaled down to 8 bits to make a standard 1-byte/sample PPM or PGM file. (Yes, this means still another copy of djpeg to keep around. But hopefully you won't need it for very long. Poskanzer's supposed to get that new PBMPLUS release out Real Soon Now.)

Of course, if you are working with 9-bit to 12-bit data, you probably have it stored in some other, nonstandard format. In that case you'll probably want to write your own I/O modules to read and write your format.

Note:

The standard Huffman tables are only valid for 8-bit data precision. If you selected more than 8-bit data precision, cjpeg uses arithmetic coding by default. The Huffman encoder normally uses entropy optimization to compute usable tables for higher precision. Otherwise, you'll have to supply different default Huffman tables.

Removing code:

If you need to make a smaller version of the JPEG software, some optional functions can be removed at compile time. See the xxx\_SUPPORTED #defines in jconfig.h and jmorecfg.h. If at all possible, we recommend that you leave in decoder support for all valid JPEG files, to ensure that you can read anyone's output. Taking out support for image file formats that you don't use is the most painless way to make the programs smaller. Another possibility is to remove some of the DCT methods: in particular, the "IFAST" method may not be enough faster than the others to be worth keeping on your machine. (If you do remove ISLOW or IFAST, be sure to redefine JDCT\_DEFAULT or JDCT\_FASTEST to a supported method, by adding a #define in jconfig.h.)

## OPTIMIZATION

=====

Unless you own a Cray, you'll probably be interested in making the JPEG software go as fast as possible. This section covers some machine-dependent optimizations you may want to try. We suggest that before trying any of this, you first get the basic installation to pass the self-test step.

Repeat the self-test after any optimization to make sure that you haven't broken anything.

The integer DCT routines perform a lot of multiplications. These multiplications must yield 32-bit results, but none of their input values are more than 16 bits wide. On many machines, notably the 680x0 and 80x86 CPUs, a 16x16=>32 bit multiply instruction is faster than a full 32x32=>32 bit multiply. Unfortunately there is no portable way to specify such a multiplication in C, but some compilers can generate one when you use the right combination of casts. See the MULTIPLYxxx macro definitions in jdct.h. If your compiler makes "int" be 32 bits and "short" be 16 bits, defining SHORTxSHORT\_32 is fairly likely to work. When experimenting with alternate definitions, be sure to test not only whether the code still works (use the self-test), but also whether it is actually faster --- on some compilers, alternate definitions may compute the right answer, yet be slower than the default. Timing cjpeg on a large PGM (grayscale) input file is the best way to check this, as the DCT will be the largest fraction of the runtime in that mode. (Note: some of the distributed compiler-specific jconfig files already contain #define switches to select appropriate MULTIPLYxxx definitions.)

If your machine has sufficiently fast floating point hardware, you may find that the float DCT method is faster than the integer DCT methods, even after tweaking the integer multiply macros. In that case you may want to make the float DCT be the default method. (The only objection to this is that float DCT results may vary slightly across machines.) To do that, add "#define JDCT\_DEFAULT JDCT\_FLOAT" to jconfig.h. Even if you don't change the default, you should redefine JDCT\_FASTEST, which is the method selected by djpeg's -fast switch. Don't forget to update the documentation files (usage.txt and/or cjpeg.1, djpeg.1) to agree with what you've done.

If access to "short" arrays is slow on your machine, it may be a win to define type JCOEF as int rather than short. This will cost a good deal of memory though, particularly in some multi-pass modes, so don't do it unless you have memory to burn and short is REALLY slow.

If your compiler can compile function calls in-line, make sure the INLINE macro in jmorecfg.h is defined as the keyword that marks a function inline-able. Some compilers have a switch that tells the compiler to inline any function it thinks is profitable (e.g., -finline-functions for gcc). Enabling such a switch is likely to make the compiled code bigger but faster.

In general, it's worth trying the maximum optimization level of your compiler, and experimenting with any optional optimizations such as loop unrolling. (Unfortunately, far too many compilers have optimizer bugs ... be prepared to back off if the code fails self-test.) If you do any experimentation along these lines, please report the optimal settings to jpeg-info@jpegclub.org so we can mention them in future releases. Be sure to specify your machine and compiler version.

## HINTS FOR SPECIFIC SYSTEMS

=====

We welcome reports on changes needed for systems not mentioned here. Submit 'em to [jpeg-info@jpegclub.org](mailto:jpeg-info@jpegclub.org). Also, if `configure` or `ckconfig.c` is wrong about how to configure the JPEG software for your system, please let us know.

Acorn RISC OS:

(Thanks to Simon Middleton for these hints on compiling with Desktop C.)

After renaming the files according to Acorn conventions, take a copy of `makefile.ansi`, change all occurrences of `'libjpeg.a'` to `'libjpeg.o'` and change these definitions as indicated:

```
CFLAGS= -throwback -IC: -Wn
LDLIBS=C:o.Stubs
SYSDEPMEM=jmemansi.o
LN=Link
AR=LibFile -c -o
```

Also add a new line `'.c.o: $(cc) $< $(cflags) -c -o $@'`. Remove the lines `'$(RM) libjpeg.o'` and `'$(AR2) libjpeg.o'` and the `'jconfig.h'` dependency section.

Copy `jconfig.txt` to `jconfig.h`. Edit `jconfig.h` to define `TWO_FILE_COMMANDLINE` and `CHAR_IS_UNSIGNED`.

Run the makefile using `!AMU` not `!Make`. If you want to use the `'clean'` and `'test'` makefile entries then you will have to fiddle with the syntax a bit and rename the test files.

Amiga:

SAS C 6.50 reportedly is too buggy to compile the IJG code properly. A patch to update to 6.51 is available from SAS or AmiNet FTP sites.

The supplied config files are set up to use `jmemname.c` as the memory manager, with temporary files being created on the device named by `"JPEGTMP:"`.

Atari ST/STE/TT:

Copy the project files `makcjpeg.st`, `makdjpeg.st`, `maktjpeg.st`, and `makljjpeg.st` to `cjpeg.prj`, `djpeg.prj`, `jpegtran.prj`, and `libjpeg.prj` respectively. The project files should work as-is with Pure C. For Turbo C, change library

filenames "pc..." to "tc..." in each project file. Note that libjpeg.prj selects jmemansi.c as the recommended memory manager. You'll probably want to adjust the DEFAULT\_MAX\_MEM setting --- you want it to be a couple hundred K less than your normal free memory. Put "#define DEFAULT\_MAX\_MEM nnnn" into jconfig.h to do this.

To use the 68881/68882 coprocessor for the floating point DCT, add the compiler option "-8" to the project files and replace pcftlib.lib with pc881lib.lib in cjpeg.prj and djpeg.prj. Or if you don't have a coprocessor, you may prefer to remove the float DCT code by undefining DCT\_FLOAT\_SUPPORTED in jmorecfg.h (since without a coprocessor, the float code will be too slow to be useful). In that case, you can delete pcftlib.lib from the project files.

Note that you must make libjpeg.lib before making cjpeg.ttp, djpeg.ttp, or jpegtran.ttp. You'll have to perform the self-test by hand.

We haven't bothered to include project files for rdjpgcom and wrjpgcom. Those source files should just be compiled by themselves; they don't depend on the JPEG library. You can use the default.prj project file of the Pure C distribution to make the programs.

There is a bug in some older versions of the Turbo C library which causes the space used by temporary files created with "tmpfile()" not to be freed after an abnormal program exit. If you check your disk afterwards, you will find cluster chains that are allocated but not used by a file. This should not happen in cjpeg/djpeg/jpegtran, since we enable a signal catcher to explicitly close temp files before exiting. But if you use the JPEG library with your own code, be sure to supply a signal catcher, or else use a different system-dependent memory manager.

Cray:

Should you be so fortunate as to be running JPEG on a Cray YMP, there is a compiler bug in old versions of Cray's Standard C (prior to 3.1). If you still have an old compiler, you'll need to insert a line reading "#pragma novector" just before the loop

```
for (i = 1; i <= (int) htbl->bits[i]; i++)
    huffsize[p++] = (char) i;
```

in fix\_huff\_tbl (in V5beta1, line 204 of jchuff.c and line 176 of jdchuff.c). [This bug may or may not still occur with the current IJG code, but it's probably a dead issue anyway...]

HP-UX:

If you have HP-UX 7.05 or later with the "software development" C compiler,



you should run the compiler in ANSI mode. If using the configure script, say

```
./configure CC='cc -Aa'
```

(or `-Ae` if you prefer). If configuring by hand, use `makefile.ansi` and add `"-Aa"` to the `CFLAGS` line in the makefile.

If you have a pre-7.05 system, or if you are using the non-ANSI C compiler delivered with a minimum HP-UX system, then you must use `makefile.unix` (and do NOT add `-Aa`); or just run `configure` without the `CC` option.

On HP 9000 series 800 machines, the HP C compiler is buggy in revisions prior to A.08.07. If you get complaints about "not a typedef name", you'll have to use `makefile.unix`, or run `configure` without the `CC` option.

Macintosh, generic comments:

The supplied user-interface files (`cjpeg.c`, `djpeg.c`, etc) are set up to provide a Unix-style command line interface. You can use this interface on the Mac by means of the `ccommand()` library routine provided by Metrowerks CodeWarrior or Think C. This is only appropriate for testing the library, however; to make a user-friendly equivalent of `cjpeg/djpeg` you'd really want to develop a Mac-style user interface. There isn't a complete example available at the moment, but there are some helpful starting points:

1. Sam Bushell's free "To JPEG" applet provides drag-and-drop conversion to JPEG under System 7 and later. This only illustrates how to use the compression half of the library, but it does a very nice job of that part.

The CodeWarrior source code is available from <http://www.pobox.com/~jsam>.

2. Jim Brunner prepared a Mac-style user interface for both compression and decompression. Unfortunately, it hasn't been updated since IJG v4, and the library's API has changed considerably since then. Still it may be of some help, particularly as a guide to compiling the IJG code under Think C.

Jim's code is available from the Info-Mac archives, at [sumex-aim.stanford.edu](http://sumex-aim.stanford.edu) or mirrors thereof; see file `/info-mac/dev/src/jpeg-convert-c.hqx`.

`jmemmac.c` is the recommended memory manager back end for Macintosh. It uses `NewPtr/DisposePtr` instead of `malloc/free`, and has a Mac-specific implementation of `jpeg_mem_available()`. It also creates temporary files that follow Mac conventions. (That part of the code relies on System-7-or-later OS functions. See the comments in `jmemmac.c` if you need to run it on System 6.) NOTE that `USE_MAC_MEMMGR` must be defined in `jconfig.h` to use `jmemmac.c`.

You can also use `jmemnobs.c`, if you don't care about handling images larger than available memory. If you use any memory manager back end other than `jmemmac.c`, we recommend replacing "malloc" and "free" by "NewPtr" and "DisposePtr", because Mac C libraries often have peculiar implementations of `malloc/free`. (For instance, `free()` may not return the freed space to the Mac Memory Manager. This is undesirable for the IJG code because `jmemmgr.c`

already clumps space requests.)

Macintosh, Metrowerks CodeWarrior:

The Unix-command-line-style interface can be used by defining `USE_CCOMMAND`. You'll also need to define `TWO_FILE_COMMANDLINE` to avoid `stdin/stdout`. This means that when using the `cjpeg/djpeg` programs, you'll have to type the input and output file names in the "Arguments" text-edit box, rather than using the file radio buttons. (Perhaps `USE_FDOPEN` or `USE_SETMODE` would eliminate the problem, but I haven't heard from anyone who's tried it.)

On 680x0 Macs, Metrowerks defines type "double" as a 10-byte IEEE extended float. `jmemmgr.c` won't like this: it wants `sizeof(ALIGN_TYPE)` to be a power of 2. Add `#define ALIGN_TYPE long` to `jconfig.h` to eliminate the complaint.

The supplied configuration file `jconfig.mac` can be used for your `jconfig.h`; it includes all the recommended symbol definitions. If you have AppleScript installed, you can run the supplied script `makeproj.mac` to create CodeWarrior project files for the library and the testbed applications, then build the library and applications. (Thanks to Dan Sears and Don Agro for this nifty hack, which saves us from trying to maintain CodeWarrior project files as part of the IJG distribution...)

Macintosh, Think C:

The documentation in Jim Brunner's "JPEG Convert" source code (see above) includes detailed build instructions for Think C; it's probably somewhat out of date for the current release, but may be helpful.

If you want to build the minimal command line version, proceed as follows. You'll have to prepare project files for the programs; we don't include any in the distribution since they are not text files. Use the file lists in any of the supplied makefiles as a guide. Also add the ANSI and Unix C libraries in a separate segment. You may need to divide the JPEG files into more than one segment; we recommend dividing compression and decompression modules. Define `USE_CCOMMAND` in `jconfig.h` so that the `ccommand()` routine is called. You must also define `TWO_FILE_COMMANDLINE` because `stdin/stdout` don't handle binary data correctly.

On 680x0 Macs, Think C defines type "double" as a 12-byte IEEE extended float. `jmemmgr.c` won't like this: it wants `sizeof(ALIGN_TYPE)` to be a power of 2. Add `#define ALIGN_TYPE long` to `jconfig.h` to eliminate the complaint.

`jconfig.mac` should work as a `jconfig.h` configuration file for Think C, but the `makeproj.mac` AppleScript script is specific to CodeWarrior. Sorry.

MIPS R3000:

MIPS's cc version 1.31 has a rather nasty optimization bug. Don't use -O if you have that compiler version. (Use "cc -V" to check the version.) Note that the R3000 chip is found in workstations from DEC and others.

MS-DOS, generic comments for 16-bit compilers:

The IJG code is designed to work well in 80x86 "small" or "medium" memory models (i.e., data pointers are 16 bits unless explicitly declared "far"; code pointers can be either size). You may be able to use small model to compile cjpeg or djpeg by itself, but you will probably have to use medium model for any larger application. This won't make much difference in performance. You *will* take a noticeable performance hit if you use a large-data memory model, and you should avoid "huge" model if at all possible. Be sure that NEED\_FAR\_POINTERS is defined in jconfig.h if you use a small-data memory model; be sure it is NOT defined if you use a large-data model. (The supplied makefiles and jconfig files for Borland and Microsoft C compile in medium model and define NEED\_FAR\_POINTERS.)

The DOS-specific memory manager, jmemdos.c, should be used if possible. It needs some assembly-code routines which are in jmemdosa.asm; make sure your makefile assembles that file and includes it in the library. If you don't have a suitable assembler, you can get pre-assembled object files for jmemdosa by FTP from ftp.uu.net:/graphics/jpeg/jdosaobj.zip. (DOS-oriented distributions of the IJG source code often include these object files.)

When using jmemdos.c, jconfig.h must define USE\_MSDOS\_MEMMGR and must set MAX\_ALLOC\_CHUNK to less than 64K (65520L is a typical value). If your C library's far-heap malloc() can't allocate blocks that large, reduce MAX\_ALLOC\_CHUNK to whatever it can handle.

If you can't use jmemdos.c for some reason --- for example, because you don't have an assembler to assemble jmemdosa.asm --- you'll have to fall back to jmemansi.c or jmemname.c. You'll probably still need to set MAX\_ALLOC\_CHUNK in jconfig.h, because most DOS C libraries won't malloc() more than 64K at a time. IMPORTANT: if you use jmemansi.c or jmemname.c, you will have to compile in a large-data memory model in order to get the right stdio library. Too bad.

wrjpgcom needs to be compiled in large model, because it malloc()s a 64KB work area to hold the comment text. If your C library's malloc can't handle that, reduce MAX\_COM\_LENGTH as necessary in wrjpgcom.c.

Most MS-DOS compilers treat stdin/stdout as text files, so you must use two-file command line style. But if your compiler has either fdopen() or

setmode(), you can use one-file style if you like. To do this, define USE\_SETMODE or USE\_FDOPEN so that stdin/stdout will be set to binary mode. (USE\_SETMODE seems to work with more DOS compilers than USE\_FDOPEN.) You should test that I/O through stdin/stdout produces the same results as I/O to explicitly named files... the "make test" procedures in the supplied makefiles do NOT use stdin/stdout.

MS-DOS, generic comments for 32-bit compilers:

None of the above comments about memory models apply if you are using a 32-bit flat-memory-space environment, such as DJGPP or Watcom C. (And you should use one if you have it, as performance will be much better than 8086-compatible code!) For flat-memory-space compilers, do NOT define NEED\_FAR\_POINTERS, and do NOT use jmemdos.c. Use jmemnobs.c if the environment supplies adequate virtual memory, otherwise use jmemansi.c or jmemname.c.

You'll still need to be careful about binary I/O through stdin/stdout. See the last paragraph of the previous section.

MS-DOS, Borland C:

Be sure to convert all the source files to DOS text format (CR/LF newlines). Although Borland C will often work OK with unmodified Unix (LF newlines) source files, sometimes it will give bogus compile errors. "Illegal character '#'" is the most common such error. (This is true with Borland C 3.1, but perhaps is fixed in newer releases.)

If you want one-file command line style, just undefine TWO\_FILE\_COMMANDLINE. jconfig.bcc already includes #define USE\_SETMODE to make this work. (fdopen does not work correctly.)

MS-DOS, Microsoft C:

makefile.mc6 works with Microsoft C, DOS Visual C++, etc. It should only be used if you want to build a 16-bit (small or medium memory model) program.

If you want one-file command line style, just undefine TWO\_FILE\_COMMANDLINE. jconfig.mc6 already includes #define USE\_SETMODE to make this work. (fdopen does not work correctly.)

Note that this makefile assumes that the working copy of itself is called "makefile". If you want to call it something else, say "makefile.mak", be sure to adjust the dependency line that reads "\$(RFILE) : makefile". Otherwise the make will fail because it doesn't know how to create "makefile".

Worse, some releases of Microsoft's make utilities give an incorrect error message in this situation.

Old versions of MS C fail with an "out of macro expansion space" error because they can't cope with the macro TRACEMS8 (defined in jerror.h). If this happens to you, the easiest solution is to change TRACEMS8 to expand to nothing. You'll lose the ability to dump out JPEG coefficient tables with `djpeg -debug -debug`, but at least you can compile.

Original MS C 6.0 is very buggy; it compiles incorrect code unless you turn off optimization entirely (remove `-O` from `CFLAGS`). `6.00A` is better, but it still generates bad code if you enable loop optimizations (`-Ol` or `-Ox`).

MS C 8.0 crashes when compiling `jquant1.c` with optimization switch `/Oo` ... which is on by default. To work around this bug, compile that one file with `/Oo-`.

Microsoft Windows (all versions), generic comments:

Some Windows system include files define `typedef boolean` as "unsigned char". The IJG code also defines `typedef boolean`, but we make it an "enum" by default. This doesn't affect the IJG programs because we don't import those Windows include files. But if you use the JPEG library in your own program, and some of your program's files import one definition of `boolean` while some import the other, you can get all sorts of mysterious problems. A good preventive step is to make the IJG library use "unsigned char" for `boolean`. To do that, add something like this to your `jconfig.h` file:

```
/* Define "boolean" as unsigned char, not enum, per Windows custom */
#ifndef __RPCNDR_H__ /* don't conflict if rpcndr.h already read */
typedef unsigned char boolean;
#endif
#ifndef FALSE /* in case these macros already exist */
#define FALSE 0 /* values of boolean */
#endif
#ifndef TRUE
#define TRUE 1
#endif
#define HAVE_BOOLEAN /* prevent jmorecfg.h from redefining it */
(This is already in jconfig.vc, by the way.)
```

`windef.h` contains the declarations

```
#define far
#define FAR far
```

Since `jmorecfg.h` tries to define `FAR` as empty, you may get a compiler warning if you include both `jpeglib.h` and `windef.h` (which `windows.h` includes). To suppress the warning, you can put `"#ifndef FAR" / "#endif"` around the line `"#define FAR"` in `jmorecfg.h`.

(Something like this is already in `jmorecfg.h`, by the way.)

When using the library in a Windows application, you will almost certainly want to modify or replace the error handler module `jerror.c`, since our default error handler does a couple of inappropriate things:

1. it tries to write error and warning messages on `stderr`;
2. in event of a fatal error, it exits by calling `exit()`.

A simple stopgap solution for problem 1 is to replace the line

```
fprintf(stderr, "%s\n", buffer);
```

(in `output_message` in `jerror.c`) with

```
MessageBox(GetActiveWindow(),buffer,"JPEG Error",MB_OK|MB_ICONERROR);
```

It's highly recommended that you at least do that much, since otherwise error messages will disappear into nowhere. (Beginning with IJG v6b, this code is already present in `jerror.c`; just define `USE_WINDOWS_MESSAGEBOX` in `jconfig.h` to enable it.)

The proper solution for problem 2 is to return control to your calling application after a library error. This can be done with the `setjmp/longjmp` technique discussed in `libjpeg.txt` and illustrated in `example.c`. (NOTE: some older Windows C compilers provide versions of `setjmp/longjmp` that don't actually work under Windows. You may need to use the Windows system functions `Catch` and `Throw` instead.)

The recommended memory manager under Windows is `jmemnobs.c`; in other words, let Windows do any virtual memory management needed. You should NOT use `jmemdos.c` nor `jmemdosa.asm` under Windows.

For Windows 3.1, we recommend compiling in medium or large memory model; for newer Windows versions, use a 32-bit flat memory model. (See the MS-DOS sections above for more info about memory models.) In the 16-bit memory models only, you'll need to put

```
#define MAX_ALLOC_CHUNK 65520L /* Maximum request to malloc() */
```

into `jconfig.h` to limit allocation chunks to 64Kb. (Without that, you'd

have to use huge memory model, which slows things down unnecessarily.)

`jmemnobs.c` works without modification in large or flat memory models, but to use medium model, you need to modify its `jpeg_get_large` and `jpeg_free_large` routines to allocate far memory. In any case, you might like to replace its calls to `malloc` and `free` with direct calls on Windows memory allocation functions.

You may also want to modify `jdatasrc.c` and `jdatadst.c` to use Windows file operations rather than `fread/fwrite`. This is only necessary if your C compiler doesn't provide a competent implementation of C stdio functions.

You might want to tweak the `RGB_xxx` macros in `jmorecfg.h` so that the library will accept or deliver color pixels in BGR sample order, not RGB; BGR order is usually more convenient under Windows. Note that this change will break

the sample applications cjpeg/djpeg, but the library itself works fine.

Many people want to convert the IJG library into a DLL. This is reasonably straightforward, but watch out for the following:

1. Don't try to compile as a DLL in small or medium memory model; use large model, or even better, 32-bit flat model. Many places in the IJG code assume the address of a local variable is an ordinary (not FAR) pointer; that isn't true in a medium-model DLL.

2. Microsoft C cannot pass file pointers between applications and DLLs. (See Microsoft Knowledge Base, PSS ID Number Q50336.) So jdatasrc.c and jdatadst.c don't work if you open a file in your application and then pass the pointer to the DLL. One workaround is to make jdatasrc.c/jdatadst.c part of your main application rather than part of the DLL.

3. You'll probably need to modify the macros GLOBAL() and EXTERN() to attach suitable linkage keywords to the exported routine names. Similarly, you'll want to modify METHODDEF() and JMETHOD() to ensure function pointers are declared in a way that lets application routines be called back through the function pointers. These macros are in jmorecfg.h. Typical definitions for a 16-bit DLL are:

```
#define GLOBAL(type) type _far _pascal _loadds _export
#define EXTERN(type) extern type _far _pascal _loadds
#define METHODDEF(type) static type _far _pascal
#define JMETHOD(type,methodname,arglist) \
    type (_far _pascal *methodname) arglist
```

For a 32-bit DLL you may want something like

```
#define GLOBAL(type) __declspec(dllexport) type
#define EXTERN(type) extern __declspec(dllexport) type
```

Although not all the GLOBAL routines are actually intended to be called by the application, the performance cost of making them all DLL entry points is negligible.

The unmodified IJG library presents a very C-specific application interface, so the resulting DLL is only usable from C or C++ applications. There has been some talk of writing wrapper code that would present a simpler interface usable from other languages, such as Visual Basic. This is on our to-do list but hasn't been very high priority --- any volunteers out there?

Microsoft Windows, Borland C:

The provided jconfig.bcc should work OK in a 32-bit Windows environment, but you'll need to tweak it in a 16-bit environment (you'd need to define NEED\_FAR\_POINTERS and MAX\_ALLOC\_CHUNK). Beware that makefile.bcc will need alteration if you want to use it for Windows --- in particular, you should

use `jmemnobs.c` not `jmemdos.c` under Windows.

Borland C++ 4.5 fails with an internal compiler error when trying to compile `jdmerge.c` in 32-bit mode. If enough people complain, perhaps Borland will fix it. In the meantime, the simplest known workaround is to add a redundant definition of the variable `range_limit` in `h2v1_merged_upsample()`, at the head of the block that handles odd image width (about line 268 in `v6_jdmerge.c`):

```
/* If image width is odd, do the last output column separately */
if (cinfo->output_width & 1) {
    register JSAMPLE * range_limit = cinfo->sample_range_limit; /* ADD THIS */
    cb = GETJSAMPLE(*inptr1);
```

Pretty bizarre, especially since the very similar routine `h2v2_merged_upsample` doesn't trigger the bug.

Recent reports suggest that this bug does not occur with "bcc32a" (the Pentium-optimized version of the compiler).

Another report from a user of Borland C 4.5 was that incorrect code (leading to a color shift in processed images) was produced if any of the following optimization switch combinations were used:

```
-Ot -Og
-Ot -Op
-Ot -Om
```

So try backing off on optimization if you see such a problem. (Are there several different releases all numbered "4.5"??)

Microsoft Windows, Microsoft Visual C++:

`jconfig.vc` should work OK with any Microsoft compiler for a 32-bit memory model. `makefile.vc` is intended for command-line use. (If you are using the Developer Studio environment, you may prefer the `DevStudio` project files; see below.)

IJG JPEG 7 adds extern "C" to `jpeglib.h`. This avoids the need to put extern "C" { ... } around `#include "jpeglib.h"` in your C++ application.

You can also force VC++ to treat the library as C++ code by renaming all the `*.c` files to `*.cpp` (and adjusting the `makefile` to match).

In this case you also need to define the symbol `DONT_USE_EXTERN_C` in the configuration to prevent `jpeglib.h` from using extern "C".

Microsoft Windows, Microsoft Visual C++ 6 Developer Studio:

We include `makefiles` that should work as project files in Developer Studio 6.0 or later. There is a library `makefile` that builds the IJG library as a static Win32 library, and application `makefiles` that build the sample applications as Win32 console applications. (Even if you only want the library, we recommend building the applications so that you can run the



self-test.)

To use:

1. Open the Windows Command Prompt, change to the source directory and execute the command line

```
nmake /f makefile.vs setup-vc6
```

If you get an error message saying that the "nmake" command could not be found, execute the command

```
"%ProgramFiles%\Microsoft Visual Studio\VC98\Bin\VCVARS32"
```

to set the environment for using Microsoft Visual C++ tools, and repeat the nmake call.

This will move jconfig.vc to jconfig.h and makefiles to project files.

(Note that the renaming is critical!)

Alternatively you can use

```
nmake /f makefile.vs setupcopy-vc6
```

This will create renamed copies of the files, which allows to repeat the setup later.

2. Open the workspace file jpeg.dsw, build the library project.  
(If you are using Developer Studio more recent than 6.0, you'll probably get a message saying that the project files are being updated.)
3. Open the workspace file apps.dsw, build the application projects.
4. To perform the self-test, execute the command line  

```
nmake /f makefile.vs test-build
```
5. Move the application .exe files from the Release folder to an appropriate location on your path.

Microsoft Windows, Visual Studio 2019 Version 16:

We include makefiles that should work as project files in Visual Studio 2019 Version 16 or later. There is a library makefile that builds the IJG library as a static Win32/x64/ARM/ARM64 library, and application makefiles that build the sample applications as Win32/x64/ARM/ARM64 console applications. (Even if you only want the library, we recommend building the applications so that you can run the self-test.)

To use:

1. Ensure you've checked the item "Desktop development with C++" in the Workloads tab of Visual Studio Installer.

Open the Developer Command Prompt for VS 2019, change to the source directory and execute the command line

```
nmake /f makefile.vs setup-v16
```

This will move jconfig.vc to jconfig.h and makefiles to project files.

(Note that the renaming is critical!)

Alternatively you can use

```
nmake /f makefile.vs setupcopy-v16
```

This will create renamed copies of the files, which allows to repeat the setup later.

2. Open the solution file jpeg.sln, build the library project.
  - a) If you are using Visual Studio more recent than 2019 Version 16, you'll probably get a message saying that the project files are being updated.
  - b) If necessary, open the project properties and adapt the Windows Target Platform Version in the Configuration Properties, General section; we support the latest version at the time of release.
  - c) If you get a warning saying that a platform cannot be found, you can either
    - \* forgo the platform and ignore the warning, or
    - \* remove the platform in the Configuration Manager, or
    - \* install the corresponding platform Buildtools in Visual Studio Installer (Workloads tab Optional components or Individual components tab).
  - d) If you want to build x64 code, change the platform setting from Win32 to x64. You can build Win32 and x64 versions side by side.
  - e) If you want to build ARM/ARM64 code, change the platform setting to ARM/ARM64. Ensure you've installed the ARM/ARM64-Buildtools in Visual Studio Installer (Workloads tab Optional components or Individual components tab). You can build Win32/x64/ARM/ARM64 versions side by side.
3. Open the solution file apps.sln, build the application projects.
4. To perform the self-test, execute the command line

```
nmake /f makefile.vs test-32
```

for the Win32 build, or on a 64-bit system

```
nmake /f makefile.vs test-64
```

for the x64 build.
5. Move the application .exe files from the Release folder to an appropriate location on your path.

Microsoft Windows, Visual Studio 2022 Version 17:

We include makefiles that should work as project files in Visual Studio 2022 Version 17 or later. There is a library makefile that builds the IIG library as a static Win32/x64/ARM/ARM64 library, and application makefiles that build the sample applications as Win32/x64/ARM/ARM64 console applications. (Even if you only want the library, we recommend building the applications so that you can run the self-test.)

To use:

1. Ensure you've checked the item "Desktop development with C++" in the Workloads tab of Visual Studio Installer.  
Open the Developer Command Prompt for VS 2022, change to the source directory and execute the command line

```
nmake /f makefile.vs setup-v17
```

This will move jconfig.vc to jconfig.h and makefiles to project files.

(Note that the renaming is critical!)

Alternatively you can use

```
nmake /f makefile.vs setupcopy-v17
```

This will create renamed copies of the files, which allows to repeat the setup later.

2. Open the solution file jpeg.sln, build the library project.

a) If you are using Visual Studio more recent than 2022 Version 17, you'll probably get a message saying that the project files are being updated.

b) If necessary, open the project properties and adapt the Windows Target Platform Version in the Configuration Properties, General section; we support the latest version at the time of release.

c) If you get a warning saying that a platform cannot be found, you can either

- \* forgo the platform and ignore the warning, or
- \* remove the platform in the Configuration Manager, or
- \* install the corresponding platform Buildtools in Visual Studio Installer (Workloads tab Optional components or Individual components tab).

d) If you want to build x64 code, change the platform setting from Win32 to x64. You can build Win32 and x64 versions side by side.

e) If you want to build ARM/ARM64 code, change the platform setting to ARM/ARM64. Ensure you've installed the ARM/ARM64-Buildtools in Visual Studio Installer (Workloads tab Optional components or Individual components tab).

You can build Win32/x64/ARM/ARM64 versions side by side.

3. Open the solution file apps.sln, build the application projects.

4. To perform the self-test, execute the command line

```
nmake /f makefile.vs test-32
```

for the Win32 build, or on a 64-bit system

```
nmake /f makefile.vs test-64
```

for the x64 build.

5. Move the application .exe files from the Release folder to an appropriate location on your path.

OS/2, Borland C++:

Watch out for optimization bugs in older Borland compilers; you may need to back off the optimization switch settings. See the comments in makefile.bcc.

SGI:

On some SGI systems, you may need to set "AR2= ar -ts" in the Makefile.

If you are using configure, you can do this by saying

`./configure RANLIB='ar -ts'`

This change is not needed on all SGIs. Use it only if the make fails at the stage of linking the completed programs.

On the MIPS R4000 architecture (Indy, etc.), the compiler option `"-mips2"` reportedly speeds up the float DCT method substantially, enough to make it faster than the default int method (but still slower than the fast int method). If you use `-mips2`, you may want to alter the default DCT method to be float. To do this, put `"#define JDCT_DEFAULT JDCT_FLOAT"` in `jconfig.h`.

VMS:

On an Alpha/VMS system with MMS, be sure to use the `"/Marco=Alpha=1"` qualifier with MMS when building the JPEG package.

VAX/VMS v5.5-1 may have problems with the test step of the build procedure reporting differences when it compares the original and test images. If the error points to the last block of the files, it is most likely bogus and may be safely ignored. It seems to be because the files are Stream\_LF and Backup/Compare has difficulty with the (presumably) null padded files. This problem was not observed on VAX/VMS v6.1 or AXP/VMS v6.1.

Found in path(s):

\* `/opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/install.txt`

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/\*

\* `jdatasrc.c`

\*

\* Copyright (C) 1994-1996, Thomas G. Lane.

\* Modified 2009-2019 by Guido Vollbeding.

\* This file is part of the Independent JPEG Group's software.

\* For conditions of distribution and use, see the accompanying README file.

\*

\* This file contains decompression data source routines for the case of

\* reading JPEG data from memory or from a file (or any stdio stream).

\* While these routines are sufficient for most applications,

\* some will want to use a different source manager.

\* IMPORTANT: we assume that `fread()` will correctly transcribe an array of

\* JOCTETs from 8-bit-wide elements on external storage. If `char` is wider

\* than 8 bits on your machine, you may need to do some tweaking.

\*/

Found in path(s):

\* `/opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdatasrc.c`

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```
/*
 * cderror.h
 *
 * Copyright (C) 1994-1997, Thomas G. Lane.
 * Modified 2009-2020 by Guido Vollbeding.
 * This file is part of the Independent JPEG Group's software.
 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file defines the error and message codes for the cjpeg/djpeg
 * applications. These strings are not needed as part of the JPEG library
 * proper.
 * Edit this file to add new codes, or to translate the message strings to
 * some other language.
 */
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/cderror.h
```

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```
/*
 * jdhuft.c
 *
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 * Modified 2006-2020 by Guido Vollbeding.
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 * For conditions of distribution and use, see the accompanying README file.
 *
 * This file contains Huffman entropy decoding routines.
 * Both sequential and progressive modes are supported in this single module.
 *
 * Much of the complexity here has to do with supporting input suspension.
 * If the data source module demands suspension, we want to be able to back
 * up to the start of the current MCU. To do this, we copy state variables
 * into local working storage, and update them back to the permanent
 * storage only upon successful completion of an MCU.
 */
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdhuft.c
```

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```
/*
 * jmehsys.h
 *
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 */
```

```
* This include file defines the interface between the system-independent
* and system-dependent portions of the JPEG memory manager. No other
* modules need include it. (The system-independent portion is jmemmgr.c;
* there are several different versions of the system-dependent portion.)
*
* This file works as-is for the system-dependent memory managers supplied
* in the IJG distribution. You may need to modify it if you write a
* custom memory manager. If system-dependent changes are needed in
* this file, the best method is to #ifdef them based on a configuration
* symbol supplied in jconfig.h, as we have done with USE_MSDOS_MEMMGR
* and USE_MAC_MEMMGR.
*/
```

Found in path(s):

```
* /opt/cola/permits/1276844147_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jmemsys.h
```

## 1.244 log4j2-ecs-layout 1.2.0

### 1.244.1 Available under license :

ecs-logging-java

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## 1.245 dropwizard-validation 2.0.34

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## 1.246 logback-throttling-appender 1.1.7

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Found in path(s):

\* /opt/cola/permits/1548380611\_1675143983.091534/0/logback-throttling-appender-1-1-7-sources-1-jar/META-INF/maven/io.dropwizard.logback/logback-throttling-appender/pom.xml

# 1.247 netty-resolver-dns 4.1.93.Final

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 */
```

Found in path(s):

```
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/UnixResolverDnsServerAddressStreamProvider.java
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsCacheEntry.java
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/NoopDnsQueryLifecycleObserver.java
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsQueryLifecycleObserverFactory.java
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/SingletonDnsServerAddressStreamProvider.java
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DefaultDnsServerAddressStreamProvider.java
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsNameResolverTimeoutException.java
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsServerAddressStreamProvider.java
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsQueryLifecycleObserver.java
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/UniSequentialDnsServerAddressStreamProvider.java
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/LoggingDnsQueryLifecycleObserver.java
```

```
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-
jar/io/netty/resolver/dns/NoopDnsQueryLifecycleObserverFactory.java
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-
jar/io/netty/resolver/dns/BiDnsQueryLifecycleObserverFactory.java
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-
jar/io/netty/resolver/dns/SequentialDnsServerAddressStreamProvider.java
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-
jar/io/netty/resolver/dns/BiDnsQueryLifecycleObserver.java
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-
jar/io/netty/resolver/dns/MultiDnsServerAddressStreamProvider.java
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-
jar/io/netty/resolver/dns/DnsServerAddressStreamProviders.java
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```

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```
* /opt/cola/permits/1698848150_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-
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\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/META-INF/maven/io.netty/netty-resolver-dns/pom.xml

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\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsCache.java

\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/NoopDnsCache.java

\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/RoundRobinDnsAddressResolverGroup.java

\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DefaultDnsCache.java

\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/InflightNameResolver.java

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\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsAddressDecoder.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsRecordResolveContext.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsAddressResolveContext.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/NameServerComparator.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/NoopAuthoritativeDnsServerCache.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/NoopDnsCnameCache.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DirContextUtils.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/AuthoritativeDnsServerCacheAdapter.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/AuthoritativeDnsServerCache.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DefaultAuthoritativeDnsServerCache.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DefaultDnsCnameCache.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsCnameCache.java

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\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsResolveContext.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsQueryContext.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsNameResolver.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsAddressResolverGroup.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/package-info.java

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\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DatagramDnsQueryContext.java

\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/PreferredAddressTypeComparator.java

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\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/LoggingDnsQueryLifecycleObserverFactory.java

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\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DefaultDnsServerAddresses.java



\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsQueryContextManager.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/RotationalDnsServerAddresses.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/SequentialDnsServerAddressStream.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsServerAddressStream.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/ShuffledDnsServerAddressStream.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/SingletonDnsServerAddresses.java  
\* /opt/cola/permits/1698848150\_1685285760.840186/0/netty-resolver-dns-4-1-93-final-sources-jar/io/netty/resolver/dns/DnsNameResolverBuilder.java

## 1.248 kerberos 1.19

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cmd/krb5/iprop/iprop\_hdr.h  
cmd/krb5/kadmin/server/ipropd\_svc.c  
cmd/krb5/kproplog/kproplog.c  
cmd/krb5/slave/kpropd\_rpc.c  
lib/gss\_mechs/mech\_krb5/et/kdb5\_err.c  
lib/gss\_mechs/mech\_spnego/mech/gssapiP\_spnego.h  
lib/gss\_mechs/mech\_spnego/mech/spnego\_mech.c  
lib/krb5/kadm5/kadm\_host\_srv\_names.c

lib/krb5/kdb/kdb\_convert.c  
lib/krb5/kdb/kdb\_hdr.h  
lib/krb5/kdb/kdb\_log.c  
lib/krb5/kdb/kdb\_log.h  
lib/libgss/g\_accept\_sec\_context.c  
lib/libgss/g\_acquire\_cred.c  
lib/libgss/g\_canon\_name.c  
lib/libgss/g\_compare\_name.c  
lib/libgss/g\_context\_time.c  
lib/libgss/g\_delete\_sec\_context.c  
lib/libgss/g\_dsp\_name.c  
lib/libgss/g\_dsp\_status.c  
lib/libgss/g\_dup\_name.c  
lib/libgss/g\_exp\_sec\_context.c  
lib/libgss/g\_export\_name.c  
lib/libgss/g\_glue.c  
lib/libgss/g\_imp\_name.c  
lib/libgss/g\_imp\_sec\_context.c  
lib/libgss/g\_init\_sec\_context.c  
lib/libgss/g\_initialize.c  
lib/libgss/g\_inquire\_context.c  
lib/libgss/g\_inquire\_cred.c  
lib/libgss/g\_inquire\_names.c  
lib/libgss/g\_process\_context.c  
lib/libgss/g\_rel\_buffer.c  
lib/libgss/g\_rel\_cred.c  
lib/libgss/g\_rel\_name.c  
lib/libgss/g\_rel\_oid\_set.c  
lib/libgss/g\_seal.c  
lib/libgss/g\_sign.c  
lib/libgss/g\_store\_cred.c  
lib/libgss/g\_unseal.c  
lib/libgss/g\_userok.c  
lib/libgss/g\_utils.c  
lib/libgss/g\_verify.c  
lib/libgss/gssd\_pname\_to\_uid.c  
uts/common/gssapi/include/gssapi\_err\_generic.h  
uts/common/gssapi/include/mechglueP.h

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lib/gssapi/generic/gssapi\_err\_generic.et  
lib/gssapi/mechglue/g\_accept\_sec\_context.c  
lib/gssapi/mechglue/g\_acquire\_cred.c  
lib/gssapi/mechglue/g\_canon\_name.c  
lib/gssapi/mechglue/g\_compare\_name.c  
lib/gssapi/mechglue/g\_context\_time.c  
lib/gssapi/mechglue/g\_delete\_sec\_context.c  
lib/gssapi/mechglue/g\_dsp\_name.c



lib/gssapi/mechglue/g\_dsp\_status.c  
lib/gssapi/mechglue/g\_dup\_name.c  
lib/gssapi/mechglue/g\_exp\_sec\_context.c  
lib/gssapi/mechglue/g\_export\_name.c  
lib/gssapi/mechglue/g\_glue.c  
lib/gssapi/mechglue/g\_imp\_name.c  
lib/gssapi/mechglue/g\_imp\_sec\_context.c  
lib/gssapi/mechglue/g\_init\_sec\_context.c  
lib/gssapi/mechglue/g\_initialize.c  
lib/gssapi/mechglue/g\_inquire\_context.c  
lib/gssapi/mechglue/g\_inquire\_cred.c  
lib/gssapi/mechglue/g\_inquire\_names.c  
lib/gssapi/mechglue/g\_process\_context.c  
lib/gssapi/mechglue/g\_rel\_buffer.c  
lib/gssapi/mechglue/g\_rel\_cred.c  
lib/gssapi/mechglue/g\_rel\_name.c  
lib/gssapi/mechglue/g\_rel\_oid\_set.c  
lib/gssapi/mechglue/g\_seal.c  
lib/gssapi/mechglue/g\_sign.c  
lib/gssapi/mechglue/g\_store\_cred.c  
lib/gssapi/mechglue/g\_unseal.c  
lib/gssapi/mechglue/g\_userok.c  
lib/gssapi/mechglue/g\_utils.c  
lib/gssapi/mechglue/g\_verify.c  
lib/gssapi/mechglue/gssd\_pname\_to\_uid.c  
lib/gssapi/mechglue/mglueP.h  
lib/gssapi/mechglue/oid\_ops.c  
lib/gssapi/spnego/gssapiP\_spnego.h  
lib/gssapi/spnego/spnego\_mech.c

and the initial implementation of incremental propagation, including the following new or changed files:

include/iprop\_hdr.h  
kadmin/server/ipropd\_svc.c  
lib/kdb/iprop.x  
lib/kdb/kdb\_convert.c  
lib/kdb/kdb\_log.c  
lib/kdb/kdb\_log.h  
lib/krb5/error\_tables/kdb5\_err.et  
kprop/kpropd\_rpc.c  
kprop/kproplog.c

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## 1.254 Iz4 1.9.4

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```



jar/org/apache/commons/logging/Log.java  
\* /opt/cola/permits/1192230980\_1629146682.85/0/jcl-over-slf4j-1-7-32-sources-jar/org/apache/commons/logging/LogFactory.java  
\* /opt/cola/permits/1192230980\_1629146682.85/0/jcl-over-slf4j-1-7-32-sources-jar/org/apache/commons/logging/impl/SLF4JLog.java  
\* /opt/cola/permits/1192230980\_1629146682.85/0/jcl-over-slf4j-1-7-32-sources-jar/org/apache/commons/logging/impl/NoOpLog.java  
\* /opt/cola/permits/1192230980\_1629146682.85/0/jcl-over-slf4j-1-7-32-sources-jar/org/apache/commons/logging/impl/SLF4JLocationAwareLog.java  
\* /opt/cola/permits/1192230980\_1629146682.85/0/jcl-over-slf4j-1-7-32-sources-jar/org/apache/commons/logging/LogConfigurationException.java  
\* /opt/cola/permits/1192230980\_1629146682.85/0/jcl-over-slf4j-1-7-32-sources-jar/org/apache/commons/logging/impl/SimpleLog.java  
\* /opt/cola/permits/1192230980\_1629146682.85/0/jcl-over-slf4j-1-7-32-sources-jar/org/apache/commons/logging/impl/SLF4JLogFactory.java  
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\* /opt/cola/permits/1192230980\_1629146682.85/0/jcl-over-slf4j-1-7-32-sources-jar/META-INF/maven/org.slf4j/jcl-over-slf4j/pom.xml  
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org.codehaus.groovy.jsr223.GroovyScriptEngineFactory

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\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/oio/OioByteStreamChannel.java

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Found in path(s):

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/StacklessClosedChannelException.java

```
* /opt/cola/permits/1698848033_1685285735.7649164/0/netty-transport-4-1-93-final-sources-
jar/io/netty/channel/socket/DuplexChannelConfig.java
```

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*/
```

Found in path(s):

```
* /opt/cola/permits/1698848033_1685285735.7649164/0/netty-transport-4-1-93-final-sources-
jar/io/netty/channel/ExtendedClosedChannelException.java
```

```
* /opt/cola/permits/1698848033_1685285735.7649164/0/netty-transport-4-1-93-final-sources-
jar/io/netty/channel/EventLoopTaskQueueFactory.java
```

```
* /opt/cola/permits/1698848033_1685285735.7649164/0/netty-transport-4-1-93-final-sources-
jar/io/netty/channel/ChannelHandlerMask.java
```

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Found in path(s):

```
* /opt/cola/permits/1698848033_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/META-
INF/native-image/io.netty.netty-transport/native-image.properties
```

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Found in path(s):

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/META-INF/maven/io.netty/netty-transport/pom.xml

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Found in path(s):

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io.netty/channel/CoalescingBufferQueue.java

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```

/**
 * Handles an I/O event or intercepts an I/O operation, and forwards it to its next handler in
 * its { @link ChannelPipeline }.
 *
 * <h3>Sub-types</h3>
 * <p>
 * { @link ChannelHandler } itself does not provide many methods, but you usually have to implement one of its
 * subtypes:
 * <ul>
 * <li>{ @link ChannelInboundHandler } to handle inbound I/O events, and</li>
 * <li>{ @link ChannelOutboundHandler } to handle outbound I/O operations.</li>
 * </ul>
 * <p>
 * <p>
 * Alternatively, the following adapter classes are provided for your convenience:
 * <ul>
 * <li>{ @link ChannelInboundHandlerAdapter } to handle inbound I/O events,</li>
 * <li>{ @link ChannelOutboundHandlerAdapter } to handle outbound I/O operations, and</li>
 * <li>{ @link ChannelDuplexHandler } to handle both inbound and outbound events</li>
 * </ul>
 * <p>
 * <p>
 * For more information, please refer to the documentation of each subtype.
 * </p>
 *
 * <h3>The context object</h3>
 * <p>
 * A { @link ChannelHandler } is provided with a { @link ChannelHandlerContext }
 * object. A { @link ChannelHandler } is supposed to interact with the
 * { @link ChannelPipeline } it belongs to via a context object. Using the
 * context object, the { @link ChannelHandler } can pass events upstream or
 * downstream, modify the pipeline dynamically, or store the information
 * (using { @link AttributeKey }s) which is specific to the handler.
 *
 * <h3>State management</h3>
 *
 * A { @link ChannelHandler } often needs to store some stateful information.
 * The simplest and recommended approach is to use member variables:
 * <pre>
 * public interface Message {
 *     // your methods here
 * }
 *
 * public class DataServerHandler extends { @link SimpleChannelInboundHandler } &lt;Message &gt; {
 *
 *     <b>private boolean loggedIn;</b>
 *
 *     { @code @Override }

```

```

* public void channelRead0(@link ChannelHandlerContext ctx, Message message) {
*     if (message instanceof LoginMessage) {
*         authenticate((LoginMessage) message);
*         <b>loggedIn = true;</b>
*     } else if (message instanceof GetDataMessage) {
*         if (<b>loggedIn</b>) {
*             ctx.writeAndFlush(fetchSecret((GetDataMessage) message));
*         } else {
*             fail();
*         }
*     }
* }
* ...
* }
* </pre>

```

\* Because the handler instance has a state variable which is dedicated to  
 \* one connection, you have to create a new handler instance for each new  
 \* channel to avoid a race condition where an unauthenticated client can get  
 \* the confidential information:

```

* <pre>
* // Create a new handler instance per channel.
* // See {@link ChannelInitializer#initChannel(Channel)}.
* public class DataServerInitializer extends {@link ChannelInitializer}&lt;{@link Channel}&gt; {
*     {@code @Override}
*     public void initChannel(@link Channel channel) {
*         channel.pipeline().addLast("handler", <b>new DataServerHandler()</b>);
*     }
* }
*
* </pre>

```

\* <h4>Using {@link AttributeKey}s</h4>

\* Although it's recommended to use member variables to store the state of a  
 \* handler, for some reason you might not want to create many handler instances.

\* In such a case, you can use {@link AttributeKey}s which is provided by  
 \* {@link ChannelHandlerContext}:

```

* <pre>
* public interface Message {
*     // your methods here
* }
*
* {@code @Sharable}
* public class DataServerHandler extends {@link SimpleChannelInboundHandler}&lt;Message&gt; {
*     private final {@link AttributeKey}&lt;{@link Boolean}&gt; auth =
*         {@link AttributeKey#valueOf(String) AttributeKey.valueOf("auth")};
*
*     {@code @Override}

```

```

* public void channelRead({ @link ChannelHandlerContext} ctx, Message message) {
*     { @link Attribute}&lt;{ @link Boolean}&gt;; attr = ctx.attr(auth);
*     if (message instanceof LoginMessage) {
*         authenticate((LoginMessage) o);
*         <b>attr.set(true)</b>;
*     } else (message instanceof GetDataMessage) {
*         if (<b>Boolean.TRUE.equals(attr.get())</b>) {
*             ctx.writeAndFlush(fetchSecret((GetDataMessage) o));
*         } else {
*             fail();
*         }
*     }
* }
* ...
* }
* </pre>

```

\* Now that the state of the handler is attached to the { @link ChannelHandlerContext}, you can add the same handler instance to different pipelines:

```

* <pre>
* public class DataServerInitializer extends { @link ChannelInitializer}&lt;{ @link Channel}&gt; {
*
*     private static final DataServerHandler <b>SHARED</b> = new DataServerHandler();
*
*     { @code @Override}
*     public void initChannel({ @link Channel} channel) {
*         channel.pipeline().addLast("handler", <b>SHARED</b>);
*     }
* }
* </pre>

```

\*

\*

\* <h4>The { @code @Sharable} annotation</h4>

\* <p>

\* In the example above which used an { @link AttributeKey}, you might have noticed the { @code @Sharable} annotation.

\* <p>

\* If a { @link ChannelHandler} is annotated with the { @code @Sharable} annotation, it means you can create an instance of the handler just once and add it to one or more { @link ChannelPipeline}s multiple times without a race condition.

\* <p>

\* If this annotation is not specified, you have to create a new handler instance every time you add it to a pipeline because it has unshared state such as member variables.

\* <p>

\* This annotation is provided for documentation purpose, just like <a href="http://www.javaconcurrencyinpractice.com/annotations/doc/">the JCIP annotations</a>.

\*

\* <h3>Additional resources worth reading</h3>  
\* <p>  
\* Please refer to the { @link ChannelHandler}, and  
\* { @link ChannelPipeline} to find out more about inbound and outbound operations,  
\* what fundamental differences they have, how they flow in a pipeline, and how to handle  
\* the operation in your application.  
\*/

Found in path(s):

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/ChannelHandler.java

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\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/pool/FixedChannelPool.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/MaxMessagesRecvByteBufAllocator.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/DefaultMaxMessagesRecvByteBufAllocator.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/pool/AbstractChannelPoolMap.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/pool/SimpleChannelPool.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/MaxBytesRecvByteBufAllocator.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/pool/AbstractChannelPoolHandler.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/pool/package-info.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/pool/ChannelHealthChecker.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/pool/ChannelPool.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/pool/ChannelPoolMap.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/DefaultMaxBytesRecvByteBufAllocator.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/pool/ChannelPoolHandler.java

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\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/local/LocalChannelRegistry.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/ChannelOutboundHandler.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/AbstractChannel.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/socket/SocketChannel.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/ChannelMetadata.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/ChannelPromise.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/socket/oio/package-info.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/ChannelFuture.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/local/package-info.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/bootstrap/package-info.java

\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-

jar/io/netty/channel/nio/AbstractNioByteChannel.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/DefaultEventLoop.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/EventLoopGroup.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/local/LocalEventLoopGroup.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/oio/OioEventLoopGroup.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/ChannelFlushPromiseNotifier.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/embedded/EmbeddedSocketAddress.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/embedded/package-info.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/SingleThreadEventLoop.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/nio/NioEventLoop.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/socket/DatagramChannel.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/bootstrap/AbstractBootstrap.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/CompleteChannelFuture.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/socket/oio/OioSocketChannel.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/embedded/EmbeddedChannel.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/nio/NioTask.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/socket/oio/OioServerSocketChannel.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/DefaultEventLoopGroup.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/nio/AbstractNioChannel.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/ChannelException.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/DefaultFileRegion.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/ThreadPerChannelEventLoopGroup.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/ChannelOutboundHandlerAdapter.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/socket/DatagramChannelConfig.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-

jar/io/netty/channel/FailedChannelFuture.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/socket/nio/NioDatagramChannelConfig.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/AbstractChannelHandlerContext.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/socket/nio/NioServerSocketChannel.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/embedded/EmbeddedEventLoop.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/ChannelDuplexHandler.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/DefaultChannelPipeline.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/ChannelInboundHandler.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/socket/nio/ProtocolFamilyConverter.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/local/LocalServerChannel.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/RecvByteBufAllocator.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/ChannelInboundHandlerAdapter.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/ChannelPromiseNotifier.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/group/ChannelGroupFutureListener.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/socket/ServerSocketChannelConfig.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/local/LocalChannel.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/socket/DatagramPacket.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/EventLoop.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/socket/ServerSocketChannel.java  
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\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/nio/AbstractNioMessageChannel.java  
\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-  
jar/io/netty/channel/VoidChannelPromise.java  
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jar/io/netty/channel/group/DefaultChannelGroupFuture.java  
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jar/io/netty/channel/local/LocalAddress.java  
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jar/io/netty/channel/PreferHeapByteBufAllocator.java  
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jar/io/netty/channel/embedded/EmbeddedChannelId.java  
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\* /opt/cola/permits/1698848033\_1685285735.7649164/0/netty-transport-4-1-93-final-sources-jar/io/netty/channel/DefaultChannelHandlerContext.java

# 1.268 netty-transport-rxtx 4.1.93.Final

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Found in path(s):

```
* /opt/cola/permits/1698848122_1685285731.1049192/0/netty-transport-rxtx-4-1-93-final-sources-
jar/io/netty/channel/rxtx/RxtxChannelOption.java
* /opt/cola/permits/1698848122_1685285731.1049192/0/netty-transport-rxtx-4-1-93-final-sources-
jar/io/netty/channel/rxtx/RxtxChannelConfig.java
* /opt/cola/permits/1698848122_1685285731.1049192/0/netty-transport-rxtx-4-1-93-final-sources-
jar/io/netty/channel/rxtx/DefaultRxtxChannelConfig.java
* /opt/cola/permits/1698848122_1685285731.1049192/0/netty-transport-rxtx-4-1-93-final-sources-
jar/io/netty/channel/rxtx/RxtxChannel.java
* /opt/cola/permits/1698848122_1685285731.1049192/0/netty-transport-rxtx-4-1-93-final-sources-
jar/io/netty/channel/rxtx/package-info.java
* /opt/cola/permits/1698848122_1685285731.1049192/0/netty-transport-rxtx-4-1-93-final-sources-
jar/io/netty/channel/rxtx/RxtxDeviceAddress.java
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Found in path(s):

\* /opt/cola/permits/1698848122\_1685285731.1049192/0/netty-transport-rxtx-4-1-93-final-sources-jar/META-INF/maven/io.netty/netty-transport-rxtx/pom.xml

## 1.269 kotlin 1.3.70-release-328

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org.ow2.asm:asm

org.ow2.asm:asm-analysis

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ASM: a very small and fast Java bytecode manipulation framework

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com.googlecode.plist:dd-plist

dd-plist - An open source library to parse and generate property lists

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com.sun.xml.bind:jaxb-impl

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org.samba.jcifs:jcifs

org.jetbrains.intellij.deps:trove4j

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org.junit.platform:junit-platform-launcher

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org.mozilla:rhino  
/\* PRESENT \*/

fun some() { }

// COMMENTS: 1

/\*

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```

*/

package org.jetbrains.kotlin.copyright

import junit.framework.AssertionFailedError
import org.jetbrains.kotlin.idea.copyright.UpdateKotlinCopyright
import org.jetbrains.kotlin.idea.test.KotlinLightCodeInsightFixtureTestCase
import org.jetbrains.kotlin.idea.test.PluginTestCaseBase
import org.jetbrains.kotlin.test.InTextDirectivesUtils
import org.junit.Assert
import java.io.File

abstract class AbstractUpdateKotlinCopyrightTest : KotlinLightCodeInsightFixtureTestCase() {
    fun doTest(path: String) {
        myFixture.configureByFile(fileName())

        val fileText = myFixture.file.text.trim()
        val expectedNumberOfComments = InTextDirectivesUtils.getPrefixedInt(fileText, "// COMMENTS: ") ?: run {
            if (fileText.isNotEmpty()) {
                throw AssertionFailedError("Every test should assert number of comments with `COMMENTS` directive")
            } else {
                0
            }
        }

        val comments = UpdateKotlinCopyright.getExistentComments(myFixture.file)
        for (comment in comments) {
            val commentText = comment.text
            when {
                commentText.contains("PRESENT") -> {
                }
                commentText.contains("ABSENT") -> {
                    throw AssertionFailedError("Unexpected comment found: `$commentText`")
                }
                else -> {
                    throw AssertionFailedError("A comment with bad directive found: `$commentText`")
                }
            }
        }

        Assert.assertEquals(
            "Wrong number of comments found:\n${comments.joinToString(separator = "\n") { it.text }}\n",
            expectedNumberOfComments, comments.size
        )
    }

    override fun getTestDataPath() = File(PluginTestCaseBase.getTestDataPathBase(), "/copyright").path +

```

```
File.separator
}
/* PRESENT */
```

```
package normal
```

```
// COMMENTS: 1
```

```
Google Dart Js backend was removed - https://code.google.com/p/dart/source/detail?r=4771
```

According to <http://www.apache.org/legal/3party.html> we can include "Google Dart Js backend" in source form, because code license is "New BSD License" (Authorized License).

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```
====
```

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```
====
```

```
/* PRESENT */
```

```
foo()
```

// COMMENTS: 1

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```

package org.jetbrains.kotlin.copyright

import junit.framework.AssertionFailedError
import org.jetbrains.kotlin.idea.copyright.UpdateKotlinCopyright
import org.jetbrains.kotlin.idea.test.KotlinLightCodeInsightFixtureTestCase
import org.jetbrains.kotlin.idea.test.PluginTestCaseBase
import org.jetbrains.kotlin.test.InTextDirectivesUtils
import org.junit.Assert
import java.io.File

abstract class AbstractUpdateKotlinCopyrightTest : KotlinLightCodeInsightFixtureTestCase() {
    fun doTest(path: String) {
        myFixture.configureByFile(path)

        val fileText = myFixture.file.text.trim()
        val expectedNumberOfComments = InTextDirectivesUtils.getPrefixedInt(fileText, "// COMMENTS: ")?: run {
            if (fileText.isNotEmpty()) {
                throw AssertionFailedError("Every test should assert number of comments with `COMMENTS`
directive")
            } else {
                0
            }
        }

        val comments = UpdateKotlinCopyright.getExistentComments(myFixture.file)
        for (comment in comments) {
            val commentText = comment.text
            when {
                commentText.contains("PRESENT") -> {
                }
                commentText.contains("ABSENT") -> {
                    throw AssertionFailedError("Unexpected comment found: ` $commentText `")
                }
                else -> {
                    throw AssertionFailedError("A comment with bad directive found: ` $commentText `")
                }
            }
        }

        Assert.assertEquals(
            "Wrong number of comments found:\n${comments.joinToString(separator = "\n") { it.text }}\n",
            expectedNumberOfComments, comments.size
        )
    }

    override fun getTestDataPath() = File(PluginTestCaseBase.getTestDataPathBase(), "/copyright").path +
File.separator

```

```
}
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 */
```

```
package tasks
```

```
import groovy.util.Node
import groovy.util.XmlParser
import org.gradle.api.DefaultTask
import org.gradle.api.Project
import org.gradle.api.tasks.Input
import org.gradle.api.tasks.InputFile
import org.gradle.api.tasks.OutputFile
import org.gradle.api.tasks.TaskAction
import java.io.File
import java.util.*
```

```
open class WriteCopyrightToFile : DefaultTask() {

    @InputFile
    var path = project.file("${project.rootDir}/.idea/copyright/apache.xml")

    @OutputFile
    var outputFile: File? = null

    @Input
    var commented: Boolean = true

    @TaskAction
    fun write() {
        if (commented) {
            outputFile!!.writeText(project.readCopyrightCommented())
        } else {
            outputFile!!.writeText(project.readCopyright())
        }
    }
}

fun Project.readCopyright(): String {
    val file = rootDir.resolve(".idea/copyright/apache.xml")

    assert(file.exists()) {
        "File $file with copyright not found"
    }
}
```

```

    }

    val xmlParser = XmlParser()
    val node = xmlParser.parse(file)
    assert(node.attribute("name") == "CopyrightManager") {
        "Format changed occasionally?"
    }

    val copyrightBlock = node.children().filterIsInstance<Node>().single()
    val noticeNode = copyrightBlock.children().filterIsInstance<Node>().single { it.attribute("name") == "notice" }
    return noticeNode.attribute("value").toString().replace("&#36;today.year",
GregorianCalendar()[Calendar.YEAR].toString())
}

fun Project.readCopyrightCommented(): String {
    return "/*\n" + readCopyright().prependIndent(" * ") + "\n */"
}
}

```

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## ## Kotlin Compiler

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  - License: BSD ([license/third\_party/asm\_license.txt][asm])
  - Origin: Derived from ASM: a very small and fast Java bytecode manipulation framework, Copyright (c) 2000-2011 INRIA, France Telecom
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  - License: MIT ([license/third\_party/pcollections\_LICENSE.txt][pcollections])
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- Path: eval4j/src/org/jetbrains/eval4j/interpreterLoop.kt
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- Path: compiler/backend/src/org/jetbrains/kotlin/codegen/optimization/common/OptimizationBasicInterpreter.java
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- Path: js/js.ast
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  - Origin: Originally part of the Dart compiler, (c) 2011 the Dart Project Authors,
- Path: js/js.inliner/src/org/jetbrains/kotlin/js/inline/FunctionInlineMutator.kt
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  - Origin: Originally part of the Dart compiler, (c) 2011 the Dart Project Authors,
- Path: js/js.parser/src/com/google
  - License: Netscape Public License 1.1 ([license/third\_party/rhino\_LICENSE.txt][rhino])
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- Path: js/js.translator/qunit/qunit.js
  - License: MIT ([license/third\_party/qunit\_license.txt][qunit])
  - Origin: QUnit, Copyright (c) 2012 John Resig, Jrn Zaefferer,
  
- Path: libraries/stdlib/src/kotlin/collections
  - License: Apache 2 ([license/third\_party/gwt\_license.txt][gwt])
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- Path: libraries/stdlib/unsigned/src/kotlin/UnsignedUtils.kt
  - License: Apache 2 ([license/third\_party/guava\_license.txt][guava])
  - Origin: Derived from Guava's UnsignedLongs, (C) 2011 The Guava Authors
  
- Path: libraries/stdlib/jvm/src/kotlin/util/MathJVM.kt
  - License: Boost Software License 1.0 ([license/third\_party/boost\_LICENSE.txt][boost])
  - Origin: Derived from boost special math functions, Copyright Eric Ford & Hubert Holin 2001.
  
- Path: libraries/stdlib/js/src/kotlin/collections
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- Path: libraries/stdlib/js-v1/src/js/long.js
  - License: Apache 2 ([license/third\_party/closure-compiler\_LICENSE.txt][closure-compiler])
  - Origin: Google Closure Library, Copyright 2009 The Closure Library Authors
  
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  - License: Boost Software License 1.0 ([license/third\_party/boost\_LICENSE.txt][boost])
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  - Origin: Copyright (C) 2011-15 The Android Open Source Project
- Path: third-party/annotations/com/android
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- Path: third-party/annotations/org/eclipse
  - License: Eclipse Public License v1.0 ([license/third\_party/testdata/eclipse\_license.txt][eclipse])
  - Origin: Eclipse JDT, Copyright (c) 2011, 2013 Stephan Herrmann and others.
- Path: third-party/annotations/androidx
  - License: Apache 2 ([license/third\_party/aosp\_license.txt][aosp])
  - Origin: Copyright (C) 2011-15 The Android Open Source Project
- Path: third-party/annotations/edu/umd/cs/findbugs
  - License: LGPL 2.1 ([license/third\_party/testdata/findbugs\_license.txt][findbugs])
  - Origin: Bytecode Analysis Framework, Copyright (C) 2005 University of Maryland
- Path: third-party/jdk8-annotations/org/eclipse
  - License: Eclipse Public License v1.0 ([license/third\_party/testdata/eclipse\_license.txt][eclipse])
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  - License: Apache 2 ([license/third\_party/testdata/rxjava\_license.txt][rxjava])
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- Path: third-party/annotations/lombok
  - License: MIT ([license/third\_party/testdata/lombok\_license.txt][lombok])
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- Path: idea/idea-android/tests/org/jetbrains/kotlin/android/AndroidTestBase.java
  - License: Apache 2 ([license/third\_party/aosp\_license.txt][aosp])
  - Origin: Copyright (C) 2011-15 The Android Open Source Project
- Path: idea/testData/android/lintQuickfix/requiresApi/RequiresApi.java
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- Path: libraries/tools/kotlin-gradle-plugin-integration-tests/src/test/resources/testProject/allOpenSpring/src/org/springframework/stereotype/Component.java
- License: Apache 2 ([license/third\_party/testdata/spring\_license.txt][spring])
- Origin: Spring Framework, Copyright 2002-2007 the original author or authors.
  
- Path: libraries/tools/kotlin-gradle-plugin-integration-tests/src/test/resources/testProject/AndroidDaggerProject
- License: Apache 2 ([license/third\_party/testdata/dagger\_license.txt][dagger])
- Origin: Dagger, Copyright (C) 2013 Square, Inc.
  
- Path: libraries/tools/kotlin-gradle-plugin-integration-tests/src/test/resources/testProject/kapt2
- License: Apache 2 ([license/third\_party/testdata/dagger\_license.txt][dagger])
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- Path: libraries/tools/kotlin-maven-plugin-test/src/it/test-allopen-spring/src/main/java/org/springframework/stereotype/Component.java
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- Origin: Gradle, Copyright 2002-2017 Gradle, Inc.
  
- Path: libraries/tools/kotlin-gradle-plugin-integration-tests/target/test-classes/testProject/noArgJpa/src/javax/persistence/Entity.java
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- Origin: javax.persistence, Copyright (c) 2008, 2017 Sun Microsystems, Oracle Corporation.
  
- Path: libraries/tools/kotlin-gradle-plugin-integration-tests/src/test/resources/testProject/noArgJpa/src/javax/persistence/Entity.java
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  - Origin: javax.persistence, Copyright (c) 2008, 2017 Sun Microsystems, Oracle Corporation.
  
- Path: libraries/tools/kotlin-test-js-runner/karma-kotlin-reporter.js
  - License: MIT ([license/third\_party/karma\_LICENSE.txt](third\_party/karma\_LICENSE.txt) and [license/third\_party/karma-teamcity-reporter\_LICENSE.txt](third\_party/karma-teamcity-reporter\_LICENSE.txt))
  - Origin: Copyright (C) 2011-2019 Google, Inc. and Copyright (C) 2011-2013 Vojta Jna and contributors.
  
- Path: libraries/tools/kotlin-test-js-runner/mocha-kotlin-reporter.js
  - License: MIT ([license/third\_party/mocha-teamcity-reporter\_LICENSE.txt](third\_party/mocha-teamcity-reporter\_LICENSE.txt))
  - Origin: Copyright (c) 2016 Jamie Sherriff
  
- Path: libraries/tools/kotlin-test-js-runner/src/utils.ts
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- Path: libraries/examples/browser-example/src/js/jquery.js
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  - Origin: jQuery JavaScript Library v1.6.2, Copyright 2011, John Resig
  
- Path: libraries/examples/browser-example-with-library/src/js/jquery.js
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[guava]: third\_party/guava\_license.txt  
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[jquery]: third\_party/jquery\_license.txt  
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```
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
jar/io/netty/handler/codec/stomp/StompConstants.java
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
jar/io/netty/handler/codec/stomp/StompHeaders.java
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
jar/io/netty/handler/codec/stomp/StompCommand.java
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
jar/io/netty/handler/codec/stomp/DefaultStompFrame.java
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
jar/io/netty/handler/codec/stomp/StompHeadersSubframe.java
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
jar/io/netty/handler/codec/stomp/StompSubframeDecoder.java
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
jar/io/netty/handler/codec/stomp/StompContentSubframe.java
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
jar/io/netty/handler/codec/stomp/LastStompContentSubframe.java
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
jar/io/netty/handler/codec/stomp/StompSubframe.java
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
jar/io/netty/handler/codec/stomp/StompSubframeEncoder.java
```

```
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
jar/io/netty/handler/codec/stomp/StompFrame.java
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
jar/io/netty/handler/codec/stomp/StompSubframeAggregator.java
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
jar/io/netty/handler/codec/stomp/package-info.java
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
jar/io/netty/handler/codec/stomp/DefaultLastStompContentSubframe.java
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
jar/io/netty/handler/codec/stomp/DefaultStompHeaders.java
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
jar/io/netty/handler/codec/stomp/DefaultStompContentSubframe.java
* /opt/cola/permits/1698848108_1685285740.2876117/0/netty-codec-stomp-4-1-93-final-sources-
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INF/maven/io.netty.netty-codec-stomp/pom.xml
```

## 1.271 sqlite 3.37.2

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# 1.275 javassist 3.28.0-GA

## 1.275.1 Available under license :

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```
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```

Found in path(s):

```
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/annotation/MemberValueVisitor.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/annotation/LongMemberValue.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/annotation/ByteMemberValue.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/annotation/StringMemberValue.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/annotation/Annotation.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/annotation/BooleanMemberValue.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/annotation/IntegerMemberValue.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/annotation/DoubleMemberValue.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/annotation/ClassMemberValue.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/annotation/ShortMemberValue.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/annotation/MemberValue.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/annotation/FloatMemberValue.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
```

jar/javassist/bytecode/annotation/AnnotationMemberValue.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
jar/javassist/bytecode/annotation/CharMemberValue.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
jar/javassist/bytecode/annotation/EnumMemberValue.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
jar/javassist/bytecode/annotation/ArrayMemberValue.java  
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```
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\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
jar/javassist/compiler/ast/ArrayInit.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
jar/javassist/bytecode/EnclosingMethodAttribute.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
jar/javassist/compiler/ast/IntConst.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
jar/javassist/convert/TransformBefore.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
jar/javassist/bytecode/StackMap.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
jar/javassist/tools/reflect/Sample.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/ClassPoolTail.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
jar/javassist/compiler/MemberResolver.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
jar/javassist/util/proxy/ProxyObject.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
jar/javassist/convert/Transformer.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
jar/javassist/bytecode/LineNumberAttribute.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/ClassClassPath.java

\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/ast/Variable.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/ast/Declarator.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/KeywordTable.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/CtConstructor.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/SyntaxError.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/Javac.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/ByteArrayClassPath.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/ClassFilePrinter.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/CtClass.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/ClassPool.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/ast/NewExpr.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/util/HotSwapper.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/CtBehavior.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/CtMember.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/ast/AssignExpr.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/TokenId.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/CompileError.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/rmi/Proxy.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/AccessorMaker.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/util/proxy/ProxyObjectOutputStream.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/rmi/AppletServer.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/ParameterAnnotationsAttribute.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/analysis/IntQueue.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/analysis/Executor.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/analysis/Frame.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/ClassMap.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/CannotCompileException.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/CtNewWrappedConstructor.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/stackmap/TypeData.java

- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/util/proxy/SecurityActions.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/DuplicateMemberException.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/ByteStream.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/CtNewClass.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/analysis/MultiArrayType.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/util/proxy/MethodHandler.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/CtField.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/ConstPool.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/reflect/Metaobject.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/rmi/ObjectNotFoundException.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/scopedpool/SoftValueHashMap.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/expr/Handler.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/analysis/MultiType.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/runtime/Cflow.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/CtNewMethod.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/scopedpool/ScopedClassPoolFactory.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/reflect/CannotCreateException.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/rmi/StubGenerator.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/CtArray.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/web/Webserver.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/SyntheticAttribute.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/ast/Symbol.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/runtime/DotClass.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/ast/InstanceOfExpr.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/runtime/Desc.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/reflect/Compiler.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/analysis/Util.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/MemberCodeGen.java

- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/ClassPath.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/CtMethod.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/reflect/CannotInvokeException.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/stackmap/MapMaker.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/NestHostAttribute.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/runtime/Inner.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/Loader.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/BadBytecode.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/expr/Instanceof.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/reflect/Reflection.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/util/proxy/DefineClassHelper.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/Translator.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/ast/Expr.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/ConstantAttribute.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/rmi/ObjectImporter.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/ast/CondExpr.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/expr/FieldAccess.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/CtNewWrappedMethod.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/CodeAnalyzer.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/ast/CastExpr.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/util/proxy/FactoryHelper.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/analysis/Subroutine.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/stackmap/TypeTag.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/ClassFileWriter.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/CodeIterator.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/NoFieldException.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/expr/ExprEditor.java
- \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/MethodInfo.java
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Eclipse

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\* org.eclipse.jetty.orbit:org.eclipse.jdt.core

The following artifacts are EPL and ASL2.

\* org.eclipse.jetty.orbit:javax.security.auth.message

The following artifacts are EPL and CDDL 1.0.

\* org.eclipse.jetty.orbit:javafx.mail.glassfish

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Oracle

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<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

\* javax.servlet:javax.servlet-api

\* javax.annotation:javax.annotation-api

\* javax.transaction:javax.transaction-api

\* javax.websocket:javax.websocket-api

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Oracle OpenJDK

If ALPN is used to negotiate HTTP/2 connections, then the following artifacts may be included in the distribution or downloaded when ALPN module is selected.

\* java.sun.security.ssl

These artifacts replace/modify OpenJDK classes. The modifications are hosted at github and both modified and original are under GPL v2 with classpath exceptions.

<http://openjdk.java.net/legal/gplv2+ce.html>

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OW2

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org.ow2.asm:asm-commons

org.ow2.asm:asm

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Apache

The following artifacts are ASL2 licensed.

org.apache.taglibs:taglibs-standard-spec

org.apache.taglibs:taglibs-standard-impl

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MortBay

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org.mortbay.jasper:apache-jsp  
org.apache.tomcat:tomcat-jasper  
org.apache.tomcat:tomcat-juli  
org.apache.tomcat:tomcat-jsp-api  
org.apache.tomcat:tomcat-el-api  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-api  
org.apache.tomcat:tomcat-util-scan  
org.apache.tomcat:tomcat-util

org.mortbay.jasper:apache-el  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-el-api

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Mortbay

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<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

org.eclipse.jetty.toolchain:jetty-schemas

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Assorted

The UnixCrypt.java code implements the one way cryptography used by Unix systems for simple password protection. Copyright 1996 Aki Yoshida, modified April 2001 by Iris Van den Broeke, Daniel Deville.

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# 1.278 log4j-api 2.19.0

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## 1.279 netty-codec-dns 4.1.93.Final

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```
* /opt/cola/permits/1698848115_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-  
jar/io/netty/handler/codec/dns/DnsOptEcsRecord.java  
* /opt/cola/permits/1698848115_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-  
jar/io/netty/handler/codec/dns/DefaultDnsOptEcsRecord.java  
* /opt/cola/permits/1698848115_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-  
jar/io/netty/handler/codec/dns/DnsPtrRecord.java  
* /opt/cola/permits/1698848115_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-  
jar/io/netty/handler/codec/dns/DefaultDnsPtrRecord.java  
* /opt/cola/permits/1698848115_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-  
jar/io/netty/handler/codec/dns/DnsOptPseudoRecord.java  
* /opt/cola/permits/1698848115_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-  
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* /opt/cola/permits/1698848115_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-jar/io/netty/handler/codec/dns/DnsRecordEncoder.java
* /opt/cola/permits/1698848115_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-jar/io/netty/handler/codec/dns/DnsQuestion.java
* /opt/cola/permits/1698848115_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-jar/io/netty/handler/codec/dns/AbstractDnsMessage.java
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\* /opt/cola/permits/1698848115\_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-jar/io/netty/handler/codec/dns/DatagramDnsQueryDecoder.java

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\* /opt/cola/permits/1698848115\_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-jar/io/netty/handler/codec/dns/package-info.java

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\* /opt/cola/permits/1698848115\_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-jar/io/netty/handler/codec/dns/DnsResponse.java

\* /opt/cola/permits/1698848115\_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-jar/io/netty/handler/codec/dns/DnsResponseCode.java

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jar/io/netty/handler/codec/dns/TcpDnsResponseEncoder.java
* /opt/cola/permits/1698848115_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-
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* /opt/cola/permits/1698848115_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-
jar/io/netty/handler/codec/dns/TcpDnsQueryEncoder.java
* /opt/cola/permits/1698848115_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-
jar/io/netty/handler/codec/dns/DnsCodecUtil.java
```



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* /opt/cola/permits/1698848115_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-
jar/io/netty/handler/codec/dns/DnsResponseDecoder.java
* /opt/cola/permits/1698848115_1685285754.4189835/0/netty-codec-dns-4-1-93-final-sources-
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* /opt/cola/permits/1268278445_1675380984.0905662/0/jhardware-0-8-6-sources-
jar/org/jutils/jhardware/info/display/AbstractDisplayInfo.java
* /opt/cola/permits/1268278445_1675380984.0905662/0/jhardware-0-8-6-sources-
jar/org/jutils/jhardware/info/processor/windows/WindowsProcessorInfo.java
* /opt/cola/permits/1268278445_1675380984.0905662/0/jhardware-0-8-6-sources-
jar/org/jutils/jhardware/model/DisplayInfo.java
* /opt/cola/permits/1268278445_1675380984.0905662/0/jhardware-0-8-6-sources-
jar/org/jutils/jhardware/HardwareInfo.java
* /opt/cola/permits/1268278445_1675380984.0905662/0/jhardware-0-8-6-sources-
jar/org/jutils/jhardware/model/MotherboardInfo.java
* /opt/cola/permits/1268278445_1675380984.0905662/0/jhardware-0-8-6-sources-
jar/org/jutils/jhardware/info/bios/windows/WindowsBiosInfo.java
* /opt/cola/permits/1268278445_1675380984.0905662/0/jhardware-0-8-6-sources-
jar/org/jutils/jhardware/info/bios/unix/UnixBiosInfo.java
* /opt/cola/permits/1268278445_1675380984.0905662/0/jhardware-0-8-6-sources-
jar/org/jutils/jhardware/info/motherboard/AbstractMotherboardInfo.java
* /opt/cola/permits/1268278445_1675380984.0905662/0/jhardware-0-8-6-sources-
jar/org/jutils/jhardware/info/HardwareFactory.java
* /opt/cola/permits/1268278445_1675380984.0905662/0/jhardware-0-8-6-sources-
jar/org/jutils/jhardware/info/processor/unix/UnixProcessorInfo.java
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\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/info/network/windows/WindowsNetworkInfo.java  
\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/model/MemoryInfo.java  
\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/info/motherboard/unix/UnixMotherboardInfo.java  
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\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/info/memory/unix/UnixMemoryInfo.java  
\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/model/ComponentInfo.java  
\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/util/OSDetector.java  
\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/info/processor/AbstractProcessorInfo.java  
\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/info/HardwareInfo.java  
\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/info/display/windows/WindowsDisplayInfo.java  
\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/info/os/unix/UnixOSInfo.java  
\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/model/OSInfo.java  
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\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/info/os/AbstractOSInfo.java  
\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/info/display/unix/UnixDisplayInfo.java  
\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/info/memory/windows/WindowsMemoryInfo.java  
\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/info/memory/AbstractMemoryInfo.java  
\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/info/motherboard/windows/WindowsMotherboardInfo.java  
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* /opt/cola/permits/1268278445_1675380984.0905662/0/jhardware-0-8-6-sources-
jar/org/jutils/jhardware/info/graphicscard/AbstractGraphicsCardInfo.java
* /opt/cola/permits/1268278445_1675380984.0905662/0/jhardware-0-8-6-sources-
jar/org/jutils/jhardware/info/graphicscard/windows/WindowsGraphicsCardInfo.java
* /opt/cola/permits/1268278445_1675380984.0905662/0/jhardware-0-8-6-sources-
jar/org/jutils/jhardware/util/TemperatureUtils.java
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\* /opt/cola/permits/1268278445\_1675380984.0905662/0/jhardware-0-8-6-sources-jar/org/jutils/jhardware/model/Display.java

## 1.281 jackson-dataformat-cbor 2.15.0

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- \* org.eclipse.jetty.orbit:javax.security.auth.message

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- \* org.eclipse.jetty.orbit:javax.mail.glassfish

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Oracle

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<https://glassfish.dev.java.net/nonav/public/CDDL+GPL.html>

- \* javax.servlet:javax.servlet-api
- \* javax.annotation:javax.annotation-api
- \* javax.transaction:javax.transaction-api
- \* javax.websocket:javax.websocket-api

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Oracle OpenJDK

If ALPN is used to negotiate HTTP/2 connections, then the following artifacts may be included in the distribution or downloaded when ALPN module is selected.

- \* java.sun.security.ssl

These artifacts replace/modify OpenJDK classes. The modifications are hosted at github and both modified and original are under GPL v2 with classpath exceptions.

<http://openjdk.java.net/legal/gplv2+ce.html>

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OW2

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- org.ow2.asm:asm-commons
- org.ow2.asm:asm

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Apache

The following artifacts are ASL2 licensed.

org.apache.taglibs:taglibs-standard-spec  
org.apache.taglibs:taglibs-standard-impl

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org.mortbay.jasper:apache-jsp  
org.apache.tomcat:tomcat-jasper  
org.apache.tomcat:tomcat-juli  
org.apache.tomcat:tomcat-jsp-api  
org.apache.tomcat:tomcat-el-api  
org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-api  
org.apache.tomcat:tomcat-util-scan  
org.apache.tomcat:tomcat-util

org.mortbay.jasper:apache-el  
org.apache.tomcat:tomcat-jasper-el  
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org.eclipse.jetty.toolchain:jetty-schemas

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Assorted

The UnixCrypt.java code implements the one way cryptography used by Unix systems for simple password protection. Copyright 1996 Aki Yoshida, modified April 2001 by Iris Van den Broeke, Daniel Deville.

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# 1.284 junit 4.13.2

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## **1.286 dropwizard-lifecycle 2.0.28**

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\* /opt/cola/permits/1613098325\_1680160344.6102023/0/auto-service-annotations-1-0-rc6-sources-1-jar/com/google/auto/service/AutoService.java

## 1.288 t-digest 3.2

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\* /opt/ws\_local/PERMITS\_SQL/1091220915\_1600449900.56/0/t-digest-3-2-sources-1-jar/com/tdunning/math/stats/FloatHistogram.java  
\* /opt/ws\_local/PERMITS\_SQL/1091220915\_1600449900.56/0/t-digest-3-2-sources-1-jar/com/tdunning/math/stats/AVLGroupTree.java  
\* /opt/ws\_local/PERMITS\_SQL/1091220915\_1600449900.56/0/t-digest-3-2-sources-1-jar/com/tdunning/math/stats/Sort.java  
\* /opt/ws\_local/PERMITS\_SQL/1091220915\_1600449900.56/0/t-digest-3-2-sources-1-

```
jar/com/tdunning/math/stats/TDigest.java
* /opt/ws_local/PERMITS_SQL/1091220915_1600449900.56/0/t-digest-3-2-sources-1-
jar/com/tdunning/math/stats/IntAVLTree.java
* /opt/ws_local/PERMITS_SQL/1091220915_1600449900.56/0/t-digest-3-2-sources-1-
jar/com/tdunning/math/stats/Histogram.java
* /opt/ws_local/PERMITS_SQL/1091220915_1600449900.56/0/t-digest-3-2-sources-1-
jar/com/tdunning/math/stats/MergingDigest.java
* /opt/ws_local/PERMITS_SQL/1091220915_1600449900.56/0/t-digest-3-2-sources-1-
jar/com/tdunning/math/stats/Centroid.java
* /opt/ws_local/PERMITS_SQL/1091220915_1600449900.56/0/t-digest-3-2-sources-1-
jar/com/tdunning/math/stats/Simple64.java
* /opt/ws_local/PERMITS_SQL/1091220915_1600449900.56/0/t-digest-3-2-sources-1-
jar/com/tdunning/math/stats/AbstractTDigest.java
* /opt/ws_local/PERMITS_SQL/1091220915_1600449900.56/0/t-digest-3-2-sources-1-
jar/com/tdunning/math/stats/AVLTreeDigest.java
```

## 1.289 profiler 1.1.1

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```
* /opt/cola/permits/1257333100_1642801922.15/0/gae-mini-profiler-1-1-1-sources-
jar/ca/jimr/gae/profiler/resources/jquery.templ.min.js
```

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\* Date: Thu Jun 30 14:16:56 2011 -0400

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\* /opt/cola/permits/1257333100\_1642801922.15/0/gae-mini-profiler-1-1-1-sources-jar/ca/jimr/gae/profiler/resources/jquery-1.6.2.min.js

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\* /opt/cola/permits/1257333100\_1642801922.15/0/gae-mini-profiler-1-1-1-sources-jar/ca/jimr/gae/profiler/MiniProfiler.java

\* /opt/cola/permits/1257333100\_1642801922.15/0/gae-mini-profiler-1-1-1-sources-jar/ca/jimr/gae/profiler/MiniProfilerFilter.java

\* /opt/cola/permits/1257333100\_1642801922.15/0/gae-mini-profiler-1-1-1-sources-jar/ca/jimr/gae/profiler/resources/MiniProfilerResourceLoader.java

\* /opt/cola/permits/1257333100\_1642801922.15/0/gae-mini-profiler-1-1-1-sources-jar/ca/jimr/gae/profiler/MiniProfilerServlet.java

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## 1.292 netty-codec-haproxy 4.1.93.Final

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\* /opt/cola/permits/1698848072\_1685285721.8695002/0/netty-codec-haproxy-4-1-93-final-sources-jar/io/netty/handler/codec/haproxy/HAProxySSLTLV.java  
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\* /opt/cola/permits/1698848072\_1685285721.8695002/0/netty-codec-haproxy-4-1-93-final-sources-jar/io/netty/handler/codec/haproxy/HAProxyConstants.java  
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## 1.293 guava 31.1-jre

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 */
/**
 * Outer class that exists solely to let us write {@code Partially.GwtIncompatible} instead of plain
 * {@code GwtIncompatible}. This is more accurate for {@link Futures#catching}, which is available
```

\* under GWT but with a slightly different signature.  
\*  
\* <p>We can't use { @code PartiallyGwtIncompatible } because then the GWT compiler wouldn't recognize  
\* it as a { @code GwtIncompatible } annotation. And for { @code Futures.catching }, we need the GWT  
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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ImmutableMultimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/CollectPreconditions.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Tables.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/RegularImmutableMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/UnmodifiableIterator.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/SingletonImmutableBiMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/thirdparty/publicsuffix/PublicSuffixPatterns.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/StandardRowSortedTable.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ImmutableMapEntrySet.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Collections2.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/StandardTable.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ImmutableCollection.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/RegularImmutableBiMap.java  
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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/TreeBasedTable.java  
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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Range.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/EmptyImmutableListMultimap.java  
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jar/com/google/common/base/NullnessCasts.java  
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jar/com/google/common/util/concurrent/NullnessCasts.java

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jar/com/google/common/hash/AbstractHasher.java  
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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/RemovalCause.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/AbstractCompositeHashFunction.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/UnsignedLong.java

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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/PrimitiveSink.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/AbstractStreamingHasher.java  
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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Ticker.java  
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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/RemovalNotification.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/BloomFilterStrategies.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/RemovalListeners.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/CacheLoader.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/UncheckedExecutionException.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Queues.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/AbstractListeningExecutorService.java

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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/ForwardingValueGraph.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/GraphConstants.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/UndirectedMultiNetworkConnections.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/StandardMutableGraph.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/EndpointPair.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/AbstractValueGraph.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/StandardValueGraph.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/DirectedMultiNetworkConnections.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/GraphBuilder.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ArrayListMultimapGwtSerializationDependencies.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/AbstractUndirectedNetworkConnections.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/RangeGwtSerializationDependencies.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/DirectedGraphConnections.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/MapIteratorCache.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/CollectCollectors.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/MoreCollectors.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ImmutableMultisetGwtSerializationDependencies.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/StandardNetwork.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/DirectedNetworkConnections.java  
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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/MultiReader.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/FluentIterable.java  
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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/Ints.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/Booleans.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ListenableFutureTask.java  
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jar/com/google/common/base/Stopwatch.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/base/CharMatcher.java  
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jar/com/google/common/primitives/Floats.java  
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jar/com/google/common/base/Converter.java

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- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/MoreObjects.java
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- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/math/Quantiles.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/Dispatcher.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/SubscriberRegistry.java

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- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/Striped64.java
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- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/AtomicDoubleArray.java

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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/RegularImmutableSortedMultiset.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/SortedIterable.java

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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractRangeSet.java

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jar/com/google/common/collect/CollectSpliterators.java

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jar/com/google/common/math/BigDecimalMath.java

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jar/com/google/common/io/Java8Compatibility.java

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jar/com/google/common/math/ToDoubleRounder.java
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jar/com/google/common/collect/UnmodifiableListIterator.java
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jar/com/google/common/collect/RowSortedTable.java
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jar/com/google/common/collect/MinMaxPriorityQueue.java
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jar/com/google/common/collect/ForwardingSortedSetMultimap.java
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- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/html/ElementTypesAreNonnullByDefault.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ElementTypesAreNonnullByDefault.java
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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ParametricNullness.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/ElementTypesAreNonnullByDefault.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/net/ElementTypesAreNonnullByDefault.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/ParametricNullness.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/ParametricNullness.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/ParametricNullness.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/ElementTypesAreNonnullByDefault.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/escape/ParametricNullness.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/graph/ParametricNullness.java

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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/FakeTimeLimiter.java



\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/GwtFuturesCatchingSpecialization.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/escape/CharEscaperBuilder.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/TimeoutFuture.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/Futures.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/CollectionFuture.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/CaseFormat.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/GwtFluentFutureCatchingSpecialization.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/annotations/VisibleForTesting.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/FuturesGetChecked.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/UncheckedTimeoutException.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/TimeLimiter.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/TypeToken.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/AbstractCatchingFuture.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/escape/CharEscaper.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/AbstractTransformFuture.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/SimpleTimeLimiter.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/FluentFuture.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/AppendableWriter.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/AggregateFuture.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/PatternFilenameFilter.java

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\* This following method is a modified version of one found in

\* <http://gee.cs.oswego.edu/cgi-bin/viewcvs.cgi/jsr166/src/test/tck/AbstractExecutorServiceTest.java?revision=1.30>

\* which contained the following notice:

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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/util/concurrent/MoreExecutors.java

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jar/com/google/common/base/PatternCompiler.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/base/JdkPattern.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/base/CommonMatcher.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/base/CommonPattern.java

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 */
/*
 * This method was rewritten in Java from an intermediate step of the Murmur hash function in
 * http://code.google.com/p/smhasher/source/browse/trunk/MurmurHash3.cpp, which contained the
 * following header:
 *
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 */
```

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```
*/opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/base/SmallCharMatcher.java
```

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```
*/opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/base/VerifyException.java
```

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Verify.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/SubscriberExceptionContext.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/CharSequenceReader.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/WrappingScheduledExecutorService.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/SubscriberExceptionHandler.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/TypeVisitor.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/FilteredMultimapValues.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractTable.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/Runnables.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/hash/HashingInputStream.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Utf8.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/thirdparty/publicsuffix/PublicSuffixType.java

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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/JdkFutureAdapters.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/xml/XmlEscapers.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/ByteArrayDataInput.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Cut.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/Callables.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/annotations/GwtIncompatible.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/AbstractExecutionThreadService.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/annotations/GwtCompatible.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/escape/Escapers.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/SignedBytes.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/SparseImmutableTable.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/LocalCache.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/escape/ArrayBasedCharEscaper.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/net/HostSpecifier.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/escape/Platform.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/CacheBuilder.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/UnsignedBytes.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ForwardingFuture.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/net/InternetDomainName.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ForwardingFluentFuture.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ForwardingListenableFuture.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/Service.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/TypeResolver.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Splitter.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/LineProcessor.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/MapMakerInternalMap.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/cache/ReferenceEntry.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/RegularImmutableTable.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/AbstractIdleService.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/net/UrlEscapers.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Platform.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/escape/ArrayBasedEscaperMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/AbstractService.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/DenseImmutableTable.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/ByteProcessor.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/SettableFuture.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/escape/ArrayBasedUnicodeEscaper.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/ByteArrayDataOutput.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/html/HtmlEscapers.java

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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/FinalizablePhantomReference.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/LineBuffer.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Function.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/LittleEndianDataOutputStream.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Throwables.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/CountingOutputStream.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/Closeables.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/DeadEvent.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Preconditions.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Supplier.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ListenableFuture.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/MultiInputStream.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/Primitives.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/package-info.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Objects.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/LineReader.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Interners.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/AsyncEventBus.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/CountingInputStream.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/Subscribe.java  
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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/AbstractIterator.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ExecutionList.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/package-info.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/ByteStreams.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/EnumMultiset.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/FinalizableReferenceQueue.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Functions.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/AllowConcurrentEvents.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/HashBiMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/Resources.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/FinalizableSoftReference.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/CharStreams.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Defaults.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Predicate.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Charsets.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Suppliers.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/FinalizableWeakReference.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/Files.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/AbstractFuture.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/Flushables.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/eventbus/EventBus.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/LittleEndianDataInputStream.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Predicates.java

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- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/DescendingMultiset.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ForwardingBlockingDeque.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/FilteredSetMultimap.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/FilteredEntryMultimap.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/RegularImmutableAsList.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/CompactLinkedHashSet.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractMultimap.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingImmutableList.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingImmutableMap.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/TransformedIterator.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/DescendingImmutableSortedSet.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/EvictingQueue.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/CompactLinkedHashMap.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingDeque.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/FilteredEntrySetMultimap.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractNavigableMap.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/FilteredKeySetMultimap.java
- \* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/FilteredMultimap.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ImmutableEnumMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractSortedKeySortedSetMultimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AllEqualOrdering.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/UnmodifiableSortedMultiset.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingBlockingDeque.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/TreeTraverser.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingNavigableSet.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/SortedMultisetBridge.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/RangeMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingNavigableMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/CompactHashSet.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/CompactHashMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/FilteredKeyListMultimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/TransformedListIterator.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingImmutableSet.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/TreeRangeMap.java

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\* Holder for web specializations of methods of { @code Floats }. Intended to be empty for regular  
\* version.  
\*/

Found in path(s):

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/primitives/FloatsMethodsForWeb.java

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jar/com/google/common/hash/MacHashFunction.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/hash/LittleEndianByteArray.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/util/concurrent/CombinedFuture.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/io/ReaderInputStream.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/util/concurrent/InterruptibleTask.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/util/concurrent/AggregateFutureState.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/hash/FarmHashFingerprint64.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/util/concurrent/AsyncCallable.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/collect/ConsumingQueueIterator.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/util/concurrent/Platform.java

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jar/com/google/common/collect/FilteredKeyMultimap.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/util/concurrent/ListenableScheduledFuture.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/io/BaseEncoding.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/collect/ImmutableRangeMap.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/math/Stats.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/math/PairedStats.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/math/StatsAccumulator.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/xml/package-
info.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/io/Closer.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/reflect/package-info.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/util/concurrent/SmoothRateLimiter.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/hash/SipHashFunction.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/reflect/Parameter.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/io/FileWriteMode.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/math/PairedStatsAccumulator.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/collect/CartesianList.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
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jar/com/google/common/reflect/TypeCapture.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/hash/LongAddable.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/hash/LongAddables.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/cache/LongAddable.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/escape/package-info.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/util/concurrent/ServiceManager.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/reflect/Invokable.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/cache/LongAddables.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/html/package-info.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/io/CharSource.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/base/StandardSystemProperty.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/hash/ChecksumHashFunction.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/hash/AbstractByteHasher.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/reflect/ClassPath.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/reflect/TypeToInstanceMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/math/LinearTransformation.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/io/CharSink.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/io/ByteSource.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/io/ByteSink.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/reflect/ImmutableTypeToInstanceMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/reflect/AbstractInvocationHandler.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/util/concurrent/RateLimiter.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/collect/ImmutableRangeSet.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/reflect/MutableTypeToInstanceMap.java

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jar/com/google/common/io/MoreFiles.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/collect/MultimapBuilder.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/collect/ImmutableMapEntry.java
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/**
* Holder for extra methods of {@code Objects} only in web. Intended to be empty for regular
* version.
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```

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Found in path(s):

```
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/collect/LinkedHashMultiset.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/collect/UsingToStringOrdering.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/collect/MutableClassToInstanceMap.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/collect/ForwardingListIterator.java
```

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ArrayListMultimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Synchronized.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ImmutableSet.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingSortedSet.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ComparatorOrdering.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/RegularImmutableSet.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ListMultimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractMapEntry.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ConcurrentHashMultiset.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Iterables.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/SingletonImmutableSet.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/NullsFirstOrdering.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/EnumBiMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractMultiset.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/TreeMultiset.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ExplicitOrdering.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Lists.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractBiMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingMapEntry.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ReverseNaturalOrdering.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/LinkedListMultimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingQueue.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/HashMultiset.java



\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractMapBasedMultiset.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractSortedSetMultimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Multiset.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/LexicographicalOrdering.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Ordering.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractListMultimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/BiMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ClassToInstanceMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/NaturalOrdering.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingSortedMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ReverseOrdering.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Iterators.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingConcurrentMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/TreeMultimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/SortedSetMultimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ImmutableList.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Multimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/LinkedHashMultimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/package-info.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/HashMultimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractMapBasedMultimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ByFunctionOrdering.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/MapDifference.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Sets.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Interner.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/SetMultimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/NullsLastOrdering.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractIterator.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingMultiset.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingIterator.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingSet.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingList.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingMultimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Multisets.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/EnumHashBiMap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingObject.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Maps.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/AbstractSetMultimap.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/Multimaps.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/CompoundOrdering.java  
\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ForwardingCollection.java  
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Found in path(s):

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/SortedMultiset.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/SortedMultisets.java

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/\*\*

\* Returns an array containing all of the elements in the specified collection. This method

\* returns the elements in the order they are returned by the collection's iterator. The returned

\* array is "safe" in that no references to it are maintained by the collection. The caller is

\* thus free to modify the returned array.

\*

\* <p>This method assumes that the collection size doesn't change while the method is running.

\*

\* <p>TODO(kevinb): support concurrently modified collections?

\*

\* @param c the collection for which to return an array of elements

\*/

Found in path(s):

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ObjectArrays.java

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*/
/*
* This method was rewritten in Java from an intermediate step of the Murmur hash function in
* http://code.google.com/p/smhasher/source/browse/trunk/MurmurHash3.cpp, which contained the
* following header:
*
* MurmurHash3 was written by Austin Appleby, and is placed in the public domain. The author
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*/
```

Found in path(s):

```
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/collect/Hashing.java
```

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Found in path(s):

```
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/collect/IndexedImmutableSet.java
```

```
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/collect/JdkBackedImmutableBiMap.java
```

```
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/collect/JdkBackedImmutableMap.java
```

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/BaseImmutableMultimap.java

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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/annotations/package-info.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/Atomics.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/package-info.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/SortedLists.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/net/package-info.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/annotations/Beta.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/collect/ContiguousSet.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ForwardingBlockingQueue.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ThreadFactoryBuilder.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Ascii.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/base/Equivalence.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/UncaughtExceptionHandler.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ListeningExecutorService.java

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/Monitor.java

```
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/base/Strings.java
```

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Found in path(s):

```
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/graph/Traverser.java
```

```
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/util/concurrent/ClosingFuture.java
```

```
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/graph/AbstractBaseGraph.java
```

```
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-  
jar/com/google/common/graph/BaseGraph.java
```

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```
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```

```
*/
```

```
/**
```

```
* Holder for web specializations of methods of { @code Shorts}. Intended to be empty for regular
```

```
* version.
```

\*/

Found in path(s):

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/ShortsMethodsForWeb.java

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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/reflect/Reflection.java

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jar/com/google/common/primitives/Platform.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/util/concurrent/Internal.java
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```

Found in path(s):

```
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/util/concurrent/ForwardingLock.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/util/concurrent/ForwardingCondition.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/primitives/ImmutableIntArray.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/hash/AbstractHashFunction.java
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/primitives/ImmutableDoubleArray.java
```



\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/ImmutableLongArray.java  
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\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/util/concurrent/ServiceManagerBridge.java  
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 */
```

```
/**
 * Holder for web specializations of methods of { @code Doubles}. Intended to be empty for regular
 * version.
 */
```

Found in path(s):

\* /opt/cola/permits/1301953781\_1649307346.56/0/guava-31-1-jre-sources-1-jar/com/google/common/primitives/DoublesMethodsForWeb.java

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 */
/**
 * Not supported. <b>You are attempting to create a map that may contain a non-{@code Comparable}
 * key.</b> Proper calls will resolve to the version in {@code ImmutableSortedMap}, not this dummy
 * version.
 *
 * @throws UnsupportedOperationException always
 * @deprecated <b>Pass a key of type {@code Comparable} to use {@link
 *   ImmutableSortedMap#of(Comparable, Object)}.</b>
 */
```

Found in path(s):

```
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/collect/ImmutableSortedMapFauxverideShim.java
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 */
/*
 * This method was written by Doug Lea with assistance from members of JCP JSR-166 Expert Group
```

```
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*
* As of 2010/06/11, this method is identical to the (package private) hash method in OpenJDK 7's
* java.util.HashMap class.
*/
```

Found in path(s):

```
* /opt/cola/permits/1301953781_1649307346.56/0/guava-31-1-jre-sources-1-
jar/com/google/common/util/concurrent/Striped.java
```

## 1.294 ant-jsch 1.10.12

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analysis/common/src/java/net/sf/snowball  
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The KStem stemmer in  
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analysis/common/src/resources/org/apache/lucene/analysis/fa/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/ro/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/bg/stopwords.txt,  
analysis/common/src/resources/org/apache/lucene/analysis/hi/stopwords.txt  
See <http://members.unine.ch/jacques.savoy/clef/index.html>.

The German,Spanish,Finnish,French,Hungarian,Italian,Portuguese,Russian and Swedish light stemmers  
(common) are based on BSD-licensed reference implementations created by Jacques Savoy and  
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analysis/common/src/java/org/apache/lucene/analysis/de/GermanLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/de/GermanMinimalStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/es/SpanishLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fi/FinnishLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchMinimalStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/hu/HungarianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/it/ItalianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/pt/PortugueseLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/ru/RussianLightStemmer.java  
analysis/common/src/java/org/apache/lucene/analysis/sv/SwedishLightStemmer.java

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### Kuromoji Japanese Morphological Analyzer - Apache Lucene Integration

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jar/io/netty/resolver/dns/macos/package-info.java
* /opt/cola/permits/1698848048_1685285724.8163495/0/netty-resolver-dns-classes-macos-4-1-93-final-sources-
jar/io/netty/resolver/dns/macos/MacOSDnsServerAddressStreamProvider.java
* /opt/cola/permits/1698848048_1685285724.8163495/0/netty-resolver-dns-classes-macos-4-1-93-final-sources-
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\* /opt/cola/permits/174180979\_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/DoubleRecordedValuesIterator.java  
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\* /opt/cola/permits/174180979\_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/HistogramLogProcessor.java  
\* /opt/cola/permits/174180979\_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/SingleWriterDoubleRecorder.java  
\* /opt/cola/permits/174180979\_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/AbstractHistogramIterator.java  
\* /opt/cola/permits/174180979\_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/DoubleAllValuesIterator.java  
\* /opt/cola/permits/174180979\_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/IntCountsHistogram.java  
\* /opt/cola/permits/174180979\_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/SynchronizedDoubleHistogram.java  
\* /opt/cola/permits/174180979\_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/PercentileIterator.java  
\* /opt/cola/permits/174180979\_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/SingleWriterRecorder.java  
\* /opt/cola/permits/174180979\_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/ConcurrentDoubleHistogram.java  
\* /opt/cola/permits/174180979\_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/SynchronizedHistogram.java  
\* /opt/cola/permits/174180979\_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/DoubleLogarithmicIterator.java  
\* /opt/cola/permits/174180979\_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/AbstractHistogramLogReader.java  
\* /opt/cola/permits/174180979\_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/LinearIterator.java

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/\*  
\* package-info.java  
\* Written by Gil Tene of Azul Systems, and released to the public domain,  
\* as explained at <http://creativecommons.org/publicdomain/zero/1.0/>  
\*/

Found in path(s):

```
* /opt/cola/permits/174180979_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/package-info.java
```

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```
/**
```

```
* Written by Gil Tene of Azul Systems, and released to the public domain,
```

```
* as explained at http://creativecommons.org/publicdomain/zero/1.0/
```

```
*
```

```
* @author Gil Tene
```

```
*/
```

```
package org.HdrHistogram;
```

```
final class Version {
```

```
    public static final String version="$VERSION$";
```

```
    public static final String build_time="$BUILD_TIME$";
```

```
}
```

Found in path(s):

```
* /opt/cola/permits/174180979_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/Version.java.template
```

## 1.302 dropwizard-core 2.0.28

### 1.302.1 Available under license :

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## 1.303 dropwizard-util 2.0.28

### 1.303.1 Available under license :

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## 1.304 okhttp 4.5.0

### 1.304.1 Available under license :

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## 1.305 groovy-test 3.0.9

### 1.305.1 Available under license :

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Found in path(s):

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Found in path(s):

- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/test/NotYetImplemented.java
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/lang/GroovyLogTestCase.groovy
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/test/GroovyShellTestCase.groovy
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/test/GroovyAssert.java
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/org/apache/groovy/test/transform/NotYetImplementedLegacyASTTransformation.java
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/mock/interceptor/Demand.groovy
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/test/JavadocAssertionTestBuilder.groovy
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/util/GroovyTestSuite.java
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/test/AllTestSuite.java
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/util/JavadocAssertionTestSuite.groovy
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/org/apache/groovy/test/ScriptTestAdapter.java
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/test/GroovyTestCase.java
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/test/StringTestUtil.groovy
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/util/AllTestSuite.java
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/test/JavadocAssertionTestSuite.groovy
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/test/GroovyLogTestCase.groovy
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/mock/interceptor/Ignore.groovy
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/transform/NotYetImplemented.java
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/mock/interceptor/MockProxyMetaClass.java
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/util/GroovyTestCase.java
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/util/StringTestUtil.groovy
- \* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/mock/interceptor/MockFor.groovy

\* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/mock/interceptor/LooseExpectation.groovy  
\* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/mock/interceptor/StubFor.groovy  
\* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/test/GroovyTestSuite.java  
\* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/mock/interceptor/StrictExpectation.groovy  
\* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/util/GroovyShellTestCase.groovy  
\* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/util/GroovyAssert.java  
\* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/util/JavadocAssertionTestBuilder.groovy  
\* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/org/codehaus/groovy/runtime/ScriptTestAdapter.java  
\* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/groovy/mock/interceptor/MockInterceptor.groovy  
\* /opt/cola/permits/1268276839\_1644387313.67/0/groovy-test-3-0-9-sources-jar/org/apache/groovy/test/transform/NotYetImplementedASTTransformation.java

# 1.306 metrics-jmx 4.1.29

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